The Builder.

VOL. LXVII. No. 2687. AUGUST 4, 1894.

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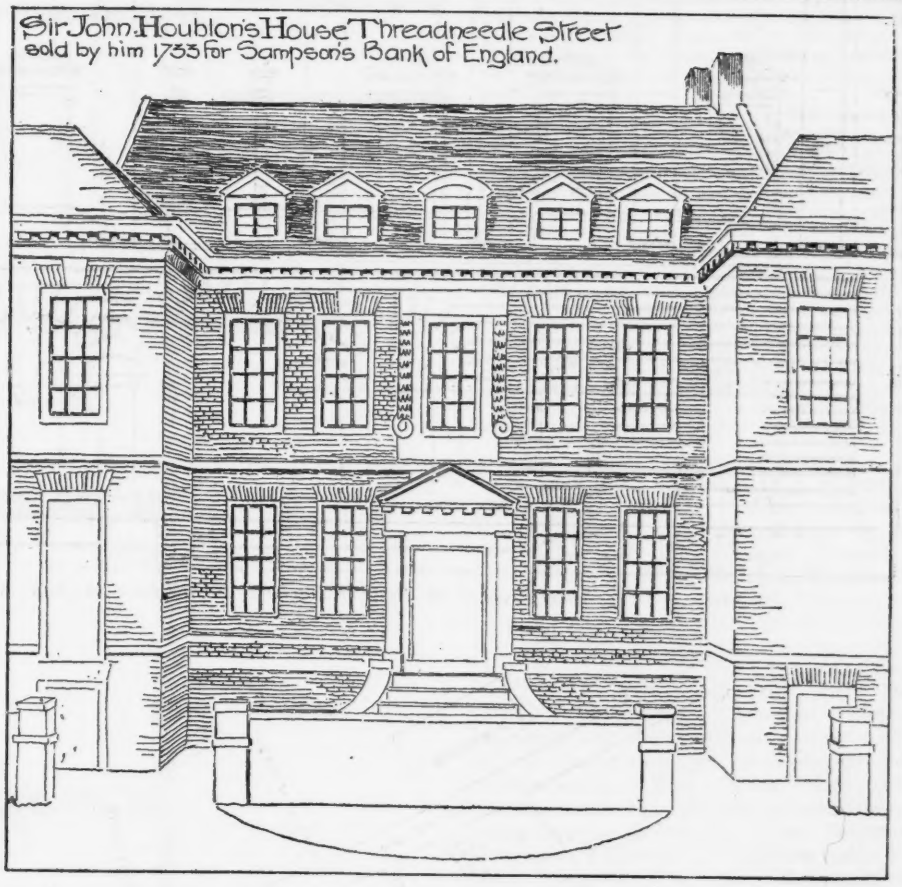
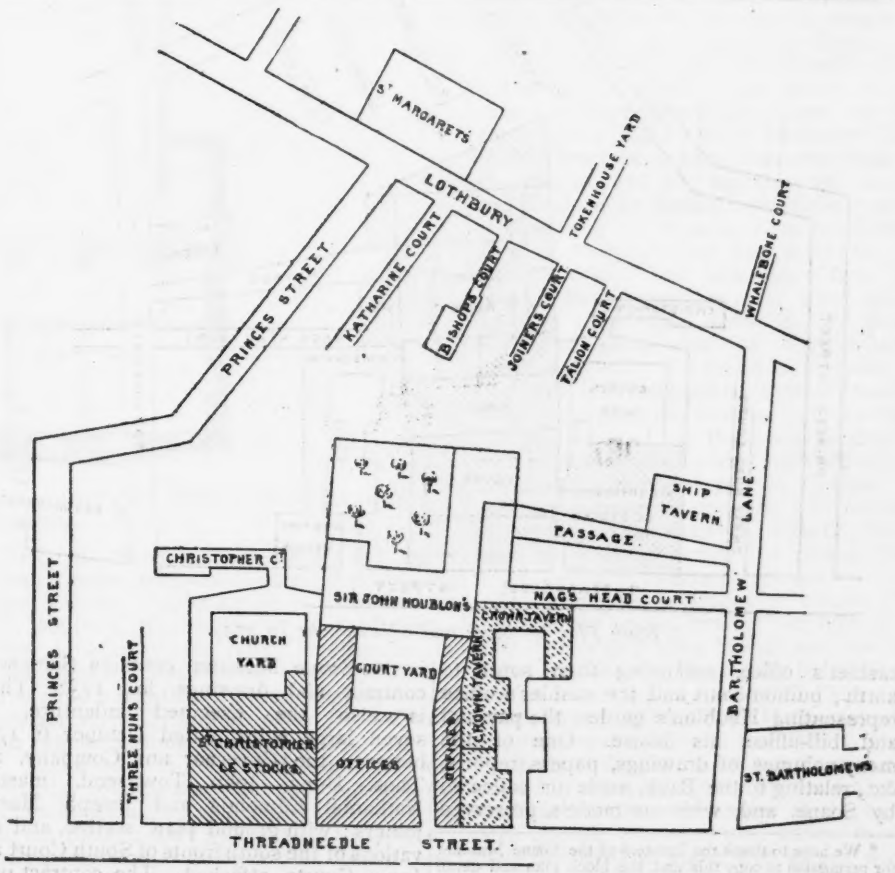
The Bank of England.

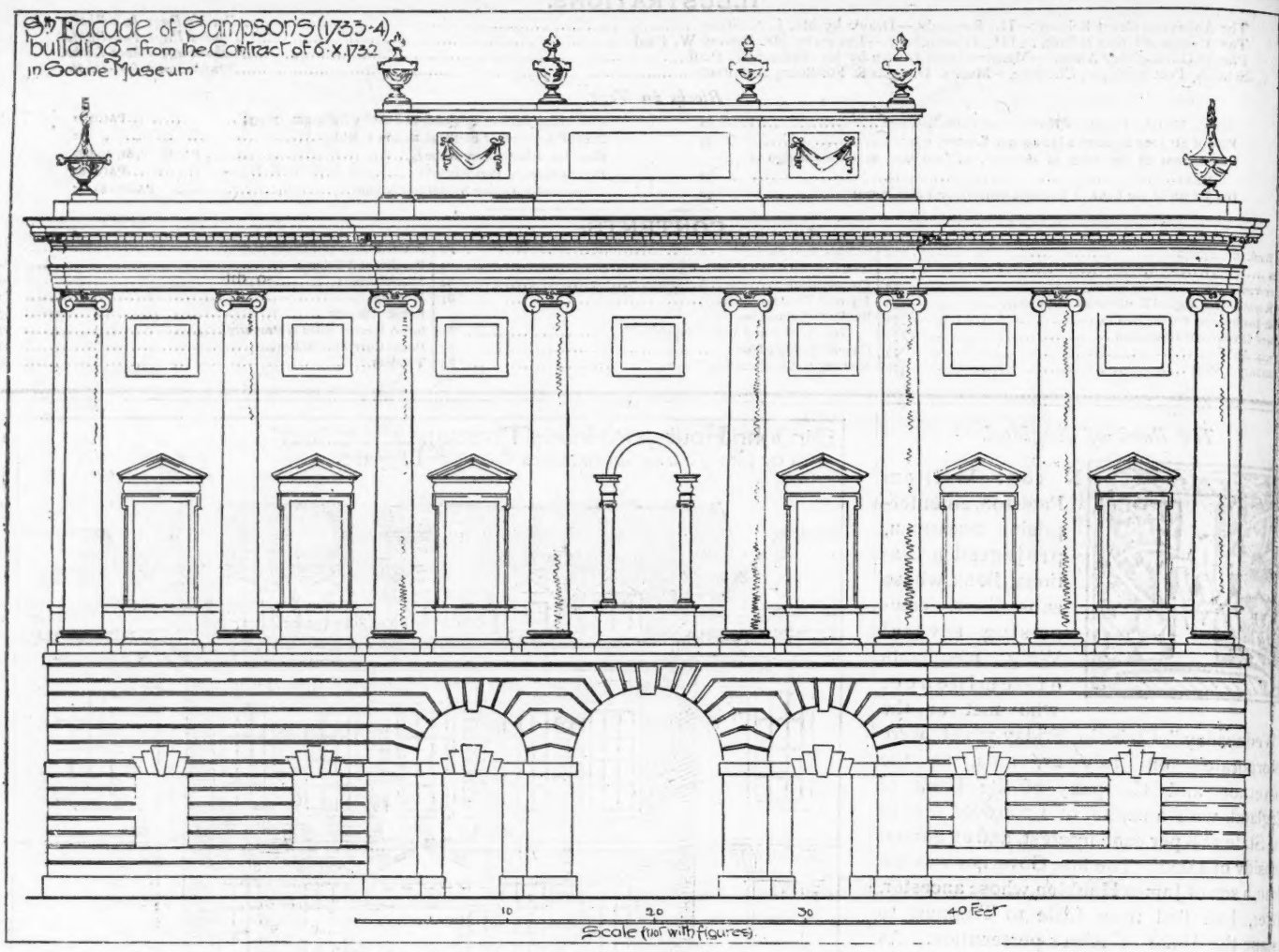
IN 1691 William Paterson, an enterprising Scotsman, projected a National Bank, whose subscribers, comprising several Whig merchants of eminence, who met at the "Wednesday" Club, in Friday-street, were incorporated on July 27, 1694, as the Governor and Company of the Bank of England, with a capital of 1,200,000*l.* lent to the State at 8 per cent. interest, and an annual subsidy of 4,000*l.* The first Governor was Sir John, a son of James Houblon, whose ancestor, Peter, had fled from Lisle to England to escape the Duke of Alva's persecution. As the Bank has thus just completed two hundred years of existence we may at this juncture not inopportunely describe how its buildings have grown from a small beginning to their present proportions.

Up to 1694 the Bank was carried on at Mercers' Hall. Removing to Grocers' Hall, they remained there until June 5, 1734, on which day business was first transacted in a building on the familiar Threadneedle-street site, designed by George Sampson. For Sampson's bank they had taken Sir John Houblon's house and garden, of which a plan (1730) is preserved in the Bodleian. Views of the house are rare: our sketch is from a water-colour by T. Hosmer Shepherd in the Crace collection, and marked as copied from a drawing in the Crowle Pennant—where, however, we have failed to find the drawing. West of the house stood St. Christopher-le-Stocks Church, with a graveyard along its north side. East of the house were the "Crown" tavern (a favourite resort of Fellows of the Royal Society when they met at Gresham College, close by), and southwards of the tavern the Sun Fire (old) Office; north-east of the latter two were Nag's Head-court and the "Ship" tavern. At that time Princes'-street had two elbows, turning into the Bank's present site; and so to Lothbury, about opposite St. Margaret's Church. The buildings we name were approached thus: from Threadneedle-street by Nun, or Three Nuns, court, leading into Christopher-court; from Lothbury, by Katherine, Bishop's, Joiner's, and Falcon courts; from Bartholomew-lane (wherein stood the "Ship" tavern), by Nag's Head-court. Thus the original banking-house (the church and churchyard remained until Soane's time) stood over the ground occupied in later years by the court-room, pay-hall, bill-office, bullion-court, and chief

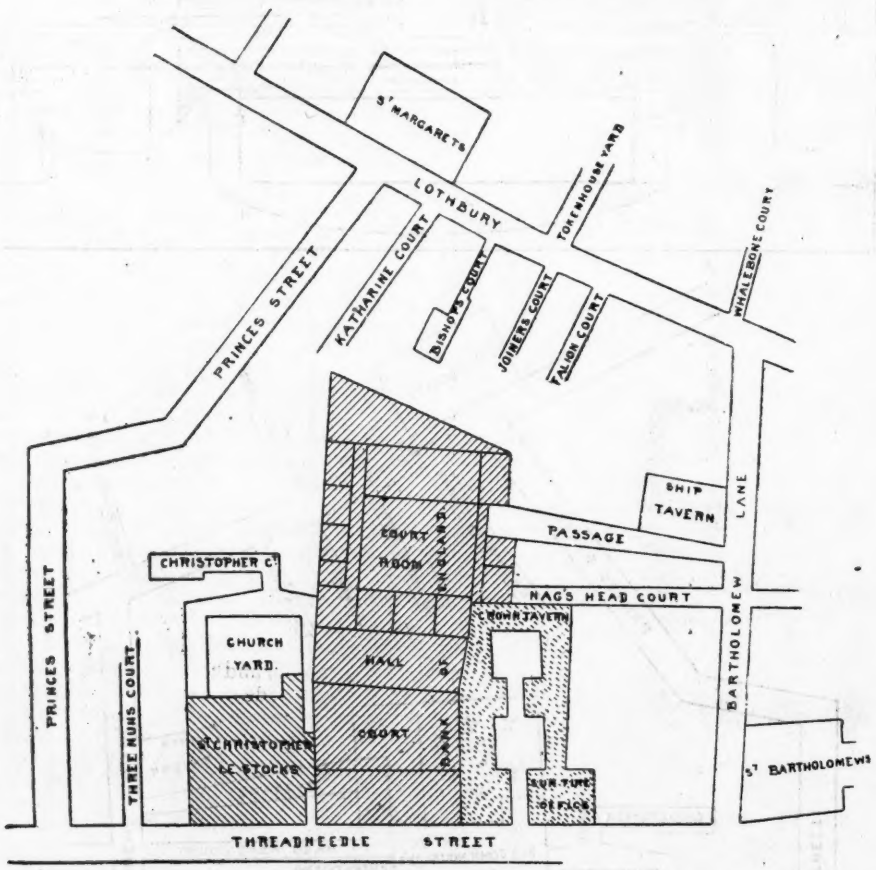




Plan of Sir John Houblon's House and Garden, 1731. (From the Gough Collection in the Bodleian.)



*Street Front of the Bank of England, as built from Sampson's design in 1733-4.**



Block Plan of Bank and adjacent site in 1734.

cashier's office, reckoning from south to north; bullion-court and the cashier's office representing Houblon's garden, the pay-hall and bill-office his house. One of the many volumes of drawings, papers, reports, &c., relating to the Bank, made or collected by Soane, and, with his models, preserved in the Soane Museum, contains Sampson's contract and drawings, fo., 1732. There is also the executed indenture, on seven large skins, dated October 6, 1732, between the Governor and Company, and Thos. Dunn, John Townsend, masons, Nathaniel Edmonds and Joseph Martyr, joiners; with ground plan, section, and elevations of the south fronts of South Court and Inner Courts, attached. The contract price amounts to 13,153*l.* 7s. 9d., *plus* old materials *in situ*, and the work is to be finished by September 29, 1733. We give, by leave of the Soane Museum trustees, the following extracts:—

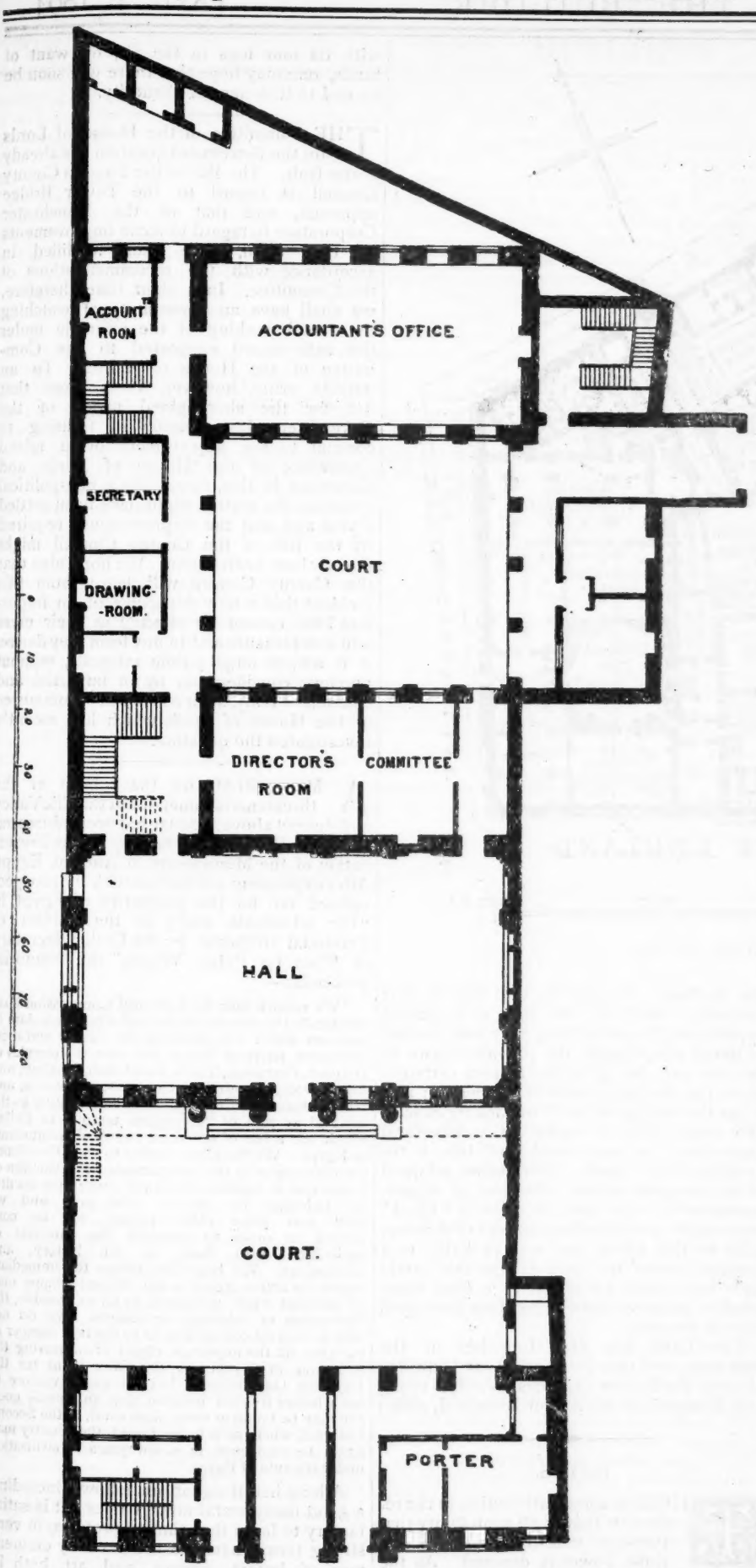
"Proposals for erecting and building a new bank . . . . which is to contain in front from East to West next Threadneedle street eighty two foot nine inches and in depth from North to South twenty four foot all in the clear abutting North on the Courtyard leading to the Great Hall which is seventy four foot nine inches from East to west and forty three foot in the Middle from North to South which joins to another Building North which is the Great Hall in length from East to West seventy four foot in the Clear in the Middle and in breadth from North to South fforty foot in the Clear the Building adjoining to the North side of the said Hall containing from East to West seventy four foot by twenty three foot in the Clear the extent of the Ground or Courtyard Northward of the Directors Room fforty seven foot by ffifty two foot Eight inches in the Clear the East and West Wings to the said Court fforty seven foot by twenty foot Each in the clear part of North west staircase and Building adjoining eighteen foot six inches by thirty one foot in the Clear, The north east staircase twenty one foot Six inches by eighteen foot Six inches in the Clear, The Accomptants' Office northwards of the Back Court Yard ffifty six foot by twenty eight foot in the Clear. . . . ."

The south front was to have three-quarter columns, and to be of Portland rustic and ashlar, the two inner fronts to be of Portland with "tin pan of pediment" [*sic*] for the middle front. Then follow particulars of the masons, proposals of the joiners, and particulars of the various trades concerned.

"Inside the Hall doorcase, withinside as without Corinthian pilasters Intabliture with Moudillions and Architrave, arch enriched according Palladio. A Venetian window at the West End with double Ionick Pilasters without and within with its proper window stools, Intabliture enriched according to Palladio. [A blank similar window to be at east end.] . . . ."

Sampson's *façade* still overlooks the paved (open) court entered from Threadneedle-street. West and Tom's perspective view, 1739, shows the south front of his middle court as a Corinthian order of three floors with four columns and angle pediment, and

* We have to thank the Trustees of the Soane Museum for permission to copy this and the block plan and detail plan of Sampson's building.



Plan of the Bank as built by Sampson, 1733-4. (From the Contract Drawings in the Soane Museum.)

his inmost court as two floors on a rusticated basement.

During 1766-83 Sir Robert Taylor* made extensive additions, for the most part eastwards to Bartholomew-lane, taking in the "Crown" and "Ship" taverns, Nag's Head-court, and the Sun Fire Office.† His east wing included the Rotunda, consols-dividend, transfer, bank-stock, and other departments, with the quadrangle containing the parlour. Taylor's work is illustrated in T. Malton's folio volume (1790-2) of thirty-two aquatint plates after his designs, in Ackerman's "Repository," and by others. His front consisted of a rusticated stylobate, supporting a Corinthian order, flanked with an angular pediment at each end.

Taylor died in 1788. In October of that year Sir John Soane was appointed, at Lord Camelford's instance, architect and surveyor to the Bank, a post he resigned in October, 1833. In his "Designs for Public and Private Buildings," 1828-31, fo., he reprints his account of surveys he made of the Bank buildings, and, in view of increasing requirements, sets forth his recommendations for an entire reconstruction of the exterior. He says:—

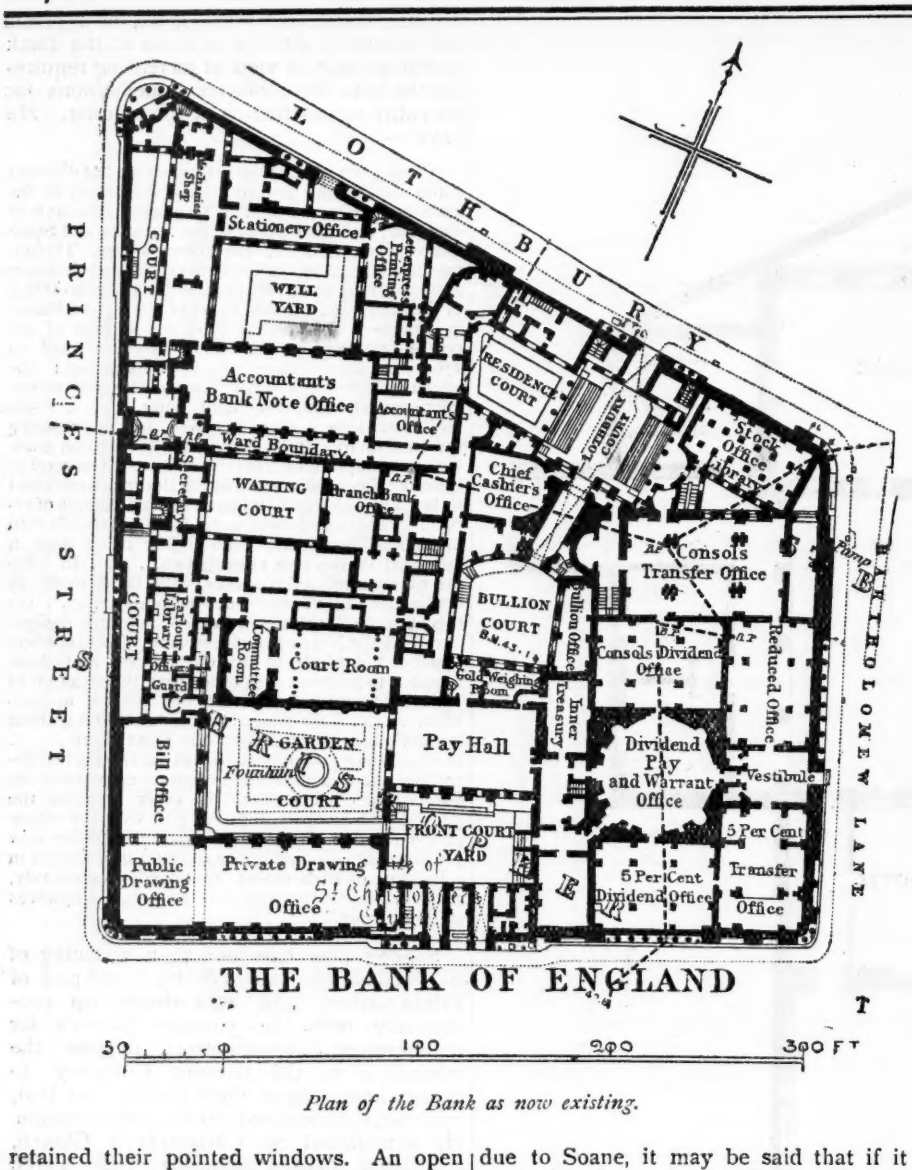
"This great national structure, erected at different times without due regard to the uniformity of the exterior—the centre built in 1763 [*sic*] in the style of Palladio; and the exterior of the Rotunda and Stock Offices, &c., next St. Bartholomew-lane, Threadneedle-street, and Prince's-street, erected between the years 1765 and 1788, from a design in imitation of the celebrated Garden Front of the Pope's Palace in Rome—is so different from the exterior of the centre building, as the North Front, erected in 1794, is from either of the foregoing; the whole presenting a great mass of heterogeneous, unconnected, and discordant parts. . . . . Plans and models were then prepared for constructing the roof of the (Bank Stock) Office on stone piers, with arches springing from them. . . . . The roofs of the other Stock Offices and of the Rotunda were found to be so completely dilapidated as not to admit of repair; they have since been taken down and rebuilt with incombustible materials, no timber being used in any part of the new construction. . . . . In 1800 the widely increased concerns of the Bank made an application to Parliament necessary. . . . . On this occasion I submitted to the Committee designs to extend the North Front westward, and to connect together the whole of the old Offices, and those required to be erected, in order that the exterior of the Bank might hereafter form one uniform appearance. . . . . This design has been acted on without any deviation, except in the North Front where . . . . the space being found insufficient for the Portico the architecture was unavoidably contracted to meet the unforeseen circumstance. In other respects the general plan has been followed; so that the whole of the exterior of this great National Edifice now presents as much uniformity as could be expected in a Building of such extent, continued progressively, as circumstances required, during a period of upwards of thirty years."

Soane's plan extended to a widening of St. Bartholomew-lane, Lothbury, and part of Prince's-street, and was drawn up concurrently with the younger Dance's for straightening Prince's-street, despite the opposition of the Grocers' Company to encroachment upon their garden; for that, however, they received 20,000*l.* compensation. He demolished St. Christopher's Church, and some houses adjoining, with Three Nuns', Christopher, Catherine, Bishop's, Joiners', and Falcon Courts, thus making space to west and north for the Garden-court (churchyard), Court Room, Note Office, Numbering Room, Accountant's and Discount departments, Governor's rooms, Secretary's lodgings, Lothbury- or Bullion-yard, Post Bill Office, and so on. Externally the Corinthian style of the circular temple at Tivoli prevails; an entire portion of it appears in the south-west angle. The Chief Cashier's department is said to be based on the orders of certain temples in Rome; the Discount Office ante-room on Hadrian's Villa; Bullion-yard is copied from the Arch of Constantine, and has figures of the Ganges and Thames by Banks. In 1808-10 Soane designed the five houses, New Bank-buildings, in Prince's-street, and in 1818-9, the National Debt and Annuities Office, Old Jewry. Bank-buildings (old) were pulled down in 1843; they stood in two blocks along the south side of Threadneedle-street, west end. To Soane succeeded C. R. Cockerell, who designed the Private Drawing Office (1836) and the Drawing Office (1849). The south side of the Bank was heightened with an attic in 1850, and a library built for the clerks. In a "Note" on October 20, 1888, we commented upon the addition of a gallery around the Rotunda, under the Dome, with the cutting across the niches there which form part of Soane's scheme.

St. Christopher-le-Stocks, so named after the adjacent stocks market established in 1282 by Henry Waleis, Mayor, and now the site of the Mansion House, was built in 1462, and its tower added *circa* 1500. The walls escaped from the Great Fire; Hatton says that its interior was rebuilt in the Tuscan style. The body of the church had a nave with two aisles and a chancel, lighted by round-headed windows; at the four angles of the tower were obelisk pinnacles with vanes, carried down through the upper two stages, which

* Pupil of Cheere, whose statue of William III. is at the Bank, as well as Taylor's figure of Britannia.

† Established in 1706. Rebuilt by Professor C. R. Cockerell on the site of St. Bartholomew-by-the-Exchange, pulled down in 1841: the south wall and chapel of church were kept for the fire office.



THE BANK OF ENGLAND

Plan of the Bank as now existing.

retained their pointed windows. An open parapet between the obelisks had four pedestals surmounted with pines. That composition perhaps suggested to Wren his similar group for the tower of St. Mary Somerset, in Upper Thames-street, though there the obelisks rise from the parapet, and the pedestals from the angles. It is not commonly known that in the churchyard, now the Bank garden, was buried (1621) Thomas Harriot, tutor and friend of Raleigh, who sent him as geographer with Sir Richard Grenville on his second expedition to Virginia, whereof Harriot published his account in 1588. The greatest English mathematician of his day, Harriot frequently corresponded with Kepler; in December, 1610, he observed, independently, with a telescope of his own contrivance, spots in the sun just four months after Galileo first discovered them, having on October 17 discovered Jupiter's fourth satellite, which Galileo detected on January 13 that same year. Henry, ninth Earl of Northumberland, gave him a home at Sion House, and his executors erected a monument to him in the church.

We may add that amongst the views and works consulted for the purposes of this account is the Grangerised copy of Pennant, bound in six fo. volumes, which Britton bought for 650 guineas for Sir John Soane at the sale, at Sotheby's, of Wm. Fauntleroy's library in April 1825. Fauntleroy, member of a banking firm at 6, Berners-street, was executed for forgeries, in company with Robert Astlett, upon the Bank, by which the latter lost, it is said, nearly 700,000*l*. During the "No Popery" riots a force of regulars and City volunteers garrisoned the Bank. It is amusing to read how Wilkes, ever zealous, as Dr. Johnson observed, in the cause of law and order, gained considerable renown by his sallies and capture of some of the mob with his own hands.

Of the architectural aspect of the Bank of England as now existing, which is mainly due to Soane, it may be said that if it is somewhat heavy in its lines and general appearance, it is a building very well treated in detail according to the prevalent taste of Soane's day, being in this respect certainly above the average of work of the period; and it has the very great merit of looking exactly like what it is, in regard to architectural expression; no one could well take it for anything but a bank. The system adopted of enclosing the whole collection of departments within what may be called a "blind" outer wall—a windowless rampart of defence, adds to this effect, and was probably in a practical sense the best course that could have been taken for safety, at a time when window defences were much less developed than at present.

The Bank has nine branches in the provinces, and two in London—at Uxbridge House, Burlington Gardens (Vardy, 1792), and Temple Bar (Sir Arthur Blomfield, 1888.)

NOTES.

THERE is some satisfaction in the reflection that in all probability that Parisian monstrosity called the Eiffel Tower is doomed. As the reader will see from the letter of our Paris correspondent on another page, M. Trélat has succeeded in gaining from the Committee for the Paris Exhibition of 1900 the concession that architectural competitors for the design of the site and buildings may be at liberty to discard the Eiffel Tower from their designs, if they are so minded. Considering the general dislike felt by all artists for this Brobdingnagian toy, and the probability that every architect in this important competition will desire to signalise his own genius and to strike out a line of his own, the Eiffel Tower stands very small chance of surviving. And as what we may call the "Wembley Park Folly" of the same kind is already stopped, with its four legs in the air, for want of funds, one may hope that there will soon be an end to this class of absurdity.

THE Committee of the House of Lords on the Betterment question has already borne fruit. The Bill of the London County Council in regard to the Tower Bridge approach, and that of the Manchester Corporation in regard to some improvements in that town, have been modified in accordance with the recommendations of the Committee. In a short time, therefore, we shall have an opportunity of watching the actual working of the principle under the safe-guard suggested to the Committee of the House of Lords. To an outside critic, however, it is clear that but for the shortsighted action of the Government last Session in refusing to consent to the appointment of a mixed Committee of the House of Lords and Commons in this, essentially a non-political question, the matter might have been settled a year ago, and the improvements required by the Bill of the County Council might already have been begun. We hope also that the County Council will learn from this incident that a new departure of an important kind cannot be effected at their mere will and pleasure and in any form they desire, if it affects large public interests, without previous consideration by an impartial and competent body, such as was the Committee of the House of Lords which has recently investigated the question.

A MEMORIAL on the subject of the threatened submersion of the Nile Valley and district above Assouan has been addressed to Nubar Pasha by the Society for the Preservation of the Monuments of Ancient Egypt. After expressing satisfaction with the prospect opened out for the prosperity of Egypt, in "the admirable study of the subject of Perennial Irrigation by the Under Secretary of State for Public Works," the memorial proceeds:—

"We remark that the Technical Commission have recommended the construction of a reservoir dam at Assouan which will submerge the largest and most important parts of Nubia and ruin the temples of Daboud, Gertassch, Tafeh, Kalabsheh, Dakkeh, and Aff-ed-Donieh, as well as the towns, cemeteries, and other remains of this region, besides leading to the removal or ruin of the various temples of Philæ, which are some of the most beautiful monuments in Egypt. We therefore express to your Excellency our deep regret at the recommended construction of a reservoir at Assouan which will cause such results, so unhappy for science and art; and we trust that some other project will be considered in order to reconcile the interests of agriculture with those of art, history, and archæology. We hope that before the immediate season for action arrives some efficient scheme may be adopted which will avoid, so far as possible, the destruction of valuable monuments. We do not wish to express our opinion as to the best manner of carrying out the important object of improving the irrigation of Egypt, as this is a point for the Egyptian Government; but we would venture to ask whether it is not possible that an equally good site may be found at some place south of the Second Cataract, when, as is to be hoped, the country may again be re-opened in a few years to civilisation under the rule of Egypt."

A long list of signatures follows, including a good many well-known names. It is satisfactory to learn that similar protests, in very strong terms, have been signed by eminent men of letters, science, and art, both in France and Germany.

ARCHÆOLOGISTS of whatever school will hear with deep regret of the death of Heinrich von Brunn. His health has been indifferent for some time, but he had not yet completed his seventy-second year, and he was midway through two important works, in one of which, though he has probably left material for its completion, his hand will be sorely missed. We allude to his illustrated "History of Greek Art." Professor Brunn was the pupil of Welcker, and belonged to a school whose methods are now, in some respects, well-nigh extinct. But if the methods of archæology have

steadily grown and developed, we have yet no individual archæologist, save his contemporary, Professor Curtius, whose fame looms so big. Brunn's reputation was made early and made decisively by the publication of his *Geschichte der Griechischen Künstler*, published between 1853 and 1859, a standard work still unreplaced. He has written since on Etruscan urns, on the Problems of Greek Vase-painting (a not very happy effort), and many other subjects, but he has not added anything substantially to his reputation. It was, perhaps, even more as a teacher than as a writer that his influence was felt. For ten years he was Secretary of the German Institute at Rome, for three he taught at Bonn, and finally, in 1865, became Professor at Munich. There he arranged his famous gallery of casts; there in his demonstration lectures he was seen at his best, and never better than when, after the most brilliant and convincing exegesis, he would turn and say, "Eine Reihe von Problemen."

UNDER the title "Architectural Education for America," Mr. Barr Ferree has edited a pamphlet (for private circulation) in which three principles in architectural education are advocated by three writers: Mr. Rotch writing in favour of the École des Beaux-Arts; Mr. Andrews in favour of the architect working hand-in-hand with the craftsman, apparently so thoroughly as not quite to know which is which (a method from which we should not expect favourable results, though we have no doubt the "craftsman" will appreciate it); and Mr. Gibson, a former English student, writing in favour of the English method as the best for combining theory with practical experience. Mr. Ferree sums up, and from his summing up we gather that he is rather in favour of the English system, but applied with due consideration of the American conditions of life. American architecture at present, he asserts, is dominated by commercialism to a greater extent than any other architecture ever was. The business of an American architect at present is to solve certain conditions "in the best way, and usually at the least expense." The "École" training certainly is not likely to do much in preparing him for this kind of career.

> "It is a remarkable fact that a school man will always talk better than he works. He will astonish you with the breadth of his training—broad, not so much for his sojourn in Paris as for his own personal application; he will amaze you by the correctness of his theory; he will dazzle you by the brilliancy of his knowledge; and then he will sit down and do the most preposterous things in design, simply because, with all his theory, his training, his brilliancy of thought, his power of expression, he has so wedded himself to certain forms and certain academic modes of expression as to be totally oblivious of their complete inapplicability to the necessities and exigencies of American architectural conditions."

That is a lesson which we fancy will soon be practically and irresistibly thrust upon the convictions of the young American student of the new school, who will work only in Paris, and calls the drawings he sends home "envois."

IN the last issue of the "Sanitary Chronicles of the Parish of Marylebone," Dr. Wynter Blyth raises an important question in regard to legal requirements as to the position of water-closets. He draws the attention of his Vestry to the by-law of the London County Council which requires that a new closet is to be constructed so that "one of its sides at the least shall be an external wall, . . . which external wall or walls shall abut immediately upon the street, or upon a yard or garden or open space of not less than 100 square feet of superficial area measured horizontally at a point below the level of the floor of such closet." Dr. Blyth says that, almost daily, plans are presented to the office, many of which do not strictly conform to the letter of the by-law, although the spirit is preserved. He has interpreted the by-law to mean that there should be sufficient air-space adjacent to the closet, and has disregarded the walls of gardens or yards where the walls or boundary-fences have been of a reasonable height. But the question having been put to the London County Council directly, whether the open space is to belong exclusively to the house, or whether it may include, for the purposes of measurement, yards belonging to adjoining houses although divided by fence-walls, they appear to have ruled that the open space need not belong exclusively to the building in connexion with which the water-closet is constructed, but must not include yards belonging to adjoining houses and divided by fence walls, as it would not be an open space if it were intercepted by walls or fences. Dr. Blyth contends that, if this is the correct interpretation, the by-law, as applied to existing buildings, is both unreasonable and impracticable, and will prevent the removal of closets from undoubtedly insanitary conditions to places where they could be conveniently and advantageously placed; and that it will also, in a number of cases, absolutely prevent the owner of trade premises providing necessary and additional closet accommodation where such accommodation is urgently required. There can be no doubt that as to the practical working of the by-law in many cases the results must be as Dr. Blyth states. It is to be hoped that the Council, to whom a communication on the point has been addressed by the Marylebone Vestry, will reconsider the wording of this by-law.

THE report made to the Local Government Board by Dr. Theodore Thomson (June 11), on the epidemic of enteric fever in the borough of Worthing and the villages of Broadwater and West Tarring is too long to go into in any detail, but it is a very instructive one, and shows the importance of water companies ascertaining fully the nature and conditions of the sources from which they are deriving supply for a district. Contrary to the usual experience, the disease was not found connected with the drinking of well-water, but was coincident with the addition of a new source of supply in the Worthing water service, which proved to be contaminated by sewage percolation in the ground. The report contains a great deal of information and suggestion which is generally useful. It concludes as follows: "The history that has been set forth of the severe outbreaks of enteric fever in the four areas of 'Worthing,' 'West Worthing,' West Tarring, and Broadwater, adds one more instance to the already lengthy list of examples of the disastrous consequences that may result from a specifically polluted public water supply. From it, as matter of first instance and of chief importance, the several Sanitary Authorities should learn the necessity of supplying a water pure at its source and free from risk of pollution after collection and during delivery. To fulfil this end they cannot display too great energy in pushing on the works necessary for the provision of a pure supply of a permanent character. The present supply procured from the well near Broadwater village, while undoubtedly preferable to that which it has replaced, is nevertheless not one that can be regarded as beyond risk of contamination. It is too near the village of Broadwater and to other human habitations to be beyond suspicion of pollution. It is therefore most desirable that a water of undoubted purity should be made available for use as soon as possible. Further, the avoidance of risk of local pollution of water-mains should be a matter of the most serious care to the Sanitary Authorities of the districts concerned. That this is liable to occur in the case of an intermittent supply delivered through mains fitted with ball-hydrants is unquestionable; and accordingly this matter should receive most careful consideration."

IN our "Note" of March 19, 1892, we directed attention to an open space between Bedford-square and Great Russell-street, on the Bedford estate, which had been appropriated for the erection of a street of flats. One of the blocks, built by Messrs. Colls & Sons, after Messrs. Martin and Purchase's designs, is nearly completed; the remainder we imagine will follow, greatly to the detriment, as we pointed out, of the amenity and healthfulness of the overcrowded neighbourhood. Further building, upon an extensive scale, is about to be undertaken in Russell-square, where a large area is now being cleared by the demolition of Nos. 1, 1a, 2—8 in the square—a block, with its gardens, standing on the east side—together with Nos. 1, 1a, and 2, (the home of Joe Munden, the actor) Bernard-street, Nos. 58, 59, 60, Guilford-street, and the west side of the Colonnade, whereof the greater portion, having a covered gallery, was rebuilt about two years ago. These houses were erected on the plotting out of the square in the Long, *prius* Southampton, Fields, behind Bedford House, ninety years ago, when "Gore-street" had been begun, and the Toxophilite Society were about to vacate their ground taken for Tavistock-square. The square's east side was set in alignment with Baltimore, afterwards Bolton, House, between Guilford-street, and No. 65, (in the square) where Sir Thomas Lawrence lived for many years. Bolton House, since divided into two, is readily distinguishable by its portico, rounded bay, and dormer roof. It was built in 1759-60 for Lord Baltimore, who died in 1771. It was next occupied by Harry, sixth Duke of Bolton, nephew of Charles, third Duke, who married Lavinia Fenton as his second wife, and left no legitimate issue. The house was then tenanted by Lord Loughborough, advanced Earl of Rosslyn, when Lord Chancellor, *obiit* 1805, Sir John Nicholl, and Sir Vicary Gibbs. Sir Thomas N. Talfourd lived in the north part of the house, when, in 1837, he edited the works and letters of Charles Lamb, and continued to ocupy it for some years later. In Timbs' "Curiosities of London," the square's dimensions are given as 665 ft. 6 in., north side, 665 ft. 3 in. south, 672 ft. 7 in. west, and 667 ft. 1 in. east—encompassing an area a little less than that of Lincoln's Inn-fields.

WE read that a notable tavern, the "Goose and Gridiron," in London House-yard, by St. Paul's, is about to be pulled down. In its front wall is a carved stone bearing a mitre between the letters "T" and "F," and, beneath, the date "1786" on an oval shield, being, we believe, the only memorial extant of the residence here, in times past, of the Bishops of London. The tavern was originally known as the "Mitre," and one of the earliest "music" houses in London. A subsequent landlord, in ridicule, perhaps, of its former pretensions, set up the sign of a goose striking a gridiron with its foot, calling it the "Swan and Harp." This sign has lately been removed, and the house, No. 8, is closed. The tavern, however, has other claims upon our notice, for it was there that the workmen who built St. Paul's were paid their wages, and that the St. Paul's Freemasons' Lodge was established, and met, under Wren's presidency, during several years. It is stated that Wren gave the lodge three candlesticks carved out of mahogany, with the trowel and mallet used by Charles II. at the laying of the first stone of the cathedral on June 21, 1675. The same mallet was used by the Prince of Wales, when, on May 20, 1880, he laid the foundation-stone of St. Mary's Cathedral, Truro.

IN reference to the new nave of St. Saviour's, Southwark, Sir A. Blomfield informs us that the variation from the choir

architecture, in inserting a marble shaft into the triple vaulting shaft, is really a restoration of what formerly existed in the nave, as discovered in pulling down the building. The architect had felt some hesitation about adopting this, as appearing to make the nave more ornate than the choir, but as the feature was undoubtedly there before, it was decided to repeat it. We may add that the clerk of works has directions to admit any one who wishes to see the nave.

WE have commented several times on the unfairness of the increasing habit of asking architects for a deposit fee before they can have the instructions and conditions for a competition supplied to them, a fee to be returned only on the receipt of a design in accordance with the conditions. The essential objection to this is that an architect cannot know, until he has seen the conditions, whether the competition is such a one as he would be willing to enter into; and if it is not, he has forfeited his deposit for no return of any kind. We may therefore call attention to the new departure made by the Durham County Council in their advertisement of a competition for new county offices, which will be found among our advertisements in the present issue. They require a deposit of 5*l.*, to be returned either on the receipt of a design, or on the return of the documents within fourteen days. This is a reasonable and fair manner of acting. It will put a check on those light-hearted persons who send for the conditions of every competition they see, often without an idea of seriously going in for it; and at the same time it gives an architect the opportunity of recovering his deposit if he finds the conditions of the competition unsuitable to his views, or beyond his resources.

LETTER FROM PARIS.

AFTER the pomp of the obsequies of the late President as celebrated in Nôtre Dame, amid the gorgeous ritual of the Catholic Church, the funeral ceremony at the Panthéon appeared singularly cold and commonplace in the large empty nave, bare of all such sculptural decoration as that which gives such a rich and harmonious total effect to Westminster Abbey.* This cold effect of the building consecrated to our great men seems on this occasion to have struck everyone alike, and a member of Parliament intends, it is understood, to ask the Government for a vote of 250,000 francs to fit up the national temple of fame with decoration and furniture fitting for the occasion of a great public funeral. Such an improvement is very necessary, but the work ought to be very carefully studied in an artistic sense in order to harmonise with the paintings which have already been executed, as well as the several important monuments commissioned some years ago from M. Falguière, M. Rodin, and some other eminent sculptors. If the funds are voted, one result will probably be to hasten the work of the sculptors also, which has rather dropped out of public memory of late.

As we have already announced, the removal of the Eiffel Tower has now become matter for discussion; and the architects who may compete for the design of the 1900 Exhibition buildings will have full power to eliminate it from their schemes. This will be a great satisfaction to the competitors, who will be able to work out their plans freely without troubling their heads about this enormous metallic structure, void of utility and character, left by the last Exhibition, and which has become from every point of view an encumbrance and a nuisance. It is to M. Trélat that we owe this important change in the programme of the competition. Some courage was necessary to plead in this case the cause of good taste and of art, and M. Trélat has no want of that quality. The 1900 Exhibition will no doubt have some other attraction which will attain with the general public the same kind of *succès de curiosité*, but it is to be hoped that this time at least the central object of the exhibition may present something in the way of artistic interest, and not be a mere industrial *tour de force*.

The jury who have been called on to adjudge the "Prix de Rome" in painting, have, after a very long discussion and several votings, given their award. In consequence of the recent death of young M. Mitrecey, the "Grand Prix" of last year, the prize has this year been given *ex æquo* to two pupils of the Ecole des Beaux-Arts, MM. Leroux and Déchenaud, of whom the former will remain at Rome for the four regulation years; the latter will remain three years, missing the one year which had already gone to the deceased prize-man. As usual, ancient history furnished the subject of the competition, "Judith showing the head of Holofernes to the inhabitants of Bethany." M. Leroux, a pupil of M. Bonnat, has produced a picture with a good deal of life and movement, and in a bright, clear style of colouring. M. Déchenaud, a pupil of M. Lefebvre and M. Benjamin-Constant, who obtained the "Second Grand Prix" in 1891, sends a work which may be described as conventionally and academically correct. M. Laparra, a pupil of MM. Lefebvre, Robert-Fleury, and Bougereau, has obtained the Second Grand Prix with a picture finely composed but sombre in colour. M. Benner, holder of the "deuxième Second Grand Prix," is the son of the well-known painter of that name. He shows undoubted artistic talent; but we regret not to see among the rewarded artists the names of M. Charbonneau and M. Guinier, whose works show very fine qualities, both in regard to imaginative conception and colour.

The ceilings of M. Bonnat and M. de Chavannes, which were illustrated in the *Builder* of June 2, are now in their places in the Hôtel de Ville, and one can study them amid their proper and permanent surroundings. The result, it must be confessed, is entirely in favour of M. Puvis de Chavannes, whose luminous and yet restrained tonality harmonises admirably with the light-tinted stone-walls. The subordinate subjects in the spandrels and tympana, which will shortly be put in their places, have been treated in a prevailing light violet tint, which is to lead gradually up to the colder and more distant tone of the ceiling, and give it etherealised effect. M. Bonnat's ceiling, on the other hand, errs by exaggerated strength. In its position in the Salon des Arts, the ceiling of which is not very high, it seems to start from its frame, and overpowers the architecture, the accessory decorations and the surrounding paintings, and is a kind of orgie of blue, white, and black which nothing can stand against; it gives the spectator the sensation of a thundercloud bursting over his head. The neighbouring ceiling by M. Besnard, which is tolerably strong in colour, appears nevertheless quite tender and misty in effect by the side of this. M. Bonnat could very well, by retouching the work, do away with some of this violence of effect, and would be wise to recognise the necessity for such an alteration.

The Municipal Council, which has just separated for the vacation, has definitely approved the plans of MM. Legros, *père et fils*, for the Boucicaut Hospital. The architects, whose design obtained the first premium in the recent competition, will therefore be able to commence without delay the works for carrying out the building, the cost of which is estimated at 4,215,000 fr., and the furnishing at 270,000 fr. The Council has also approved of a scheme for the construction, near the public abattoirs, of a large freezing-mill, one object of which is to lay up a large stock of frozen meat in time of war. The establishment is, in fact, to be placed entirely under the control of the War Department, which will contribute half the cost, estimated at 600,000 frs.

At the Ecole des Beaux-Arts the Chenavard competition has just been adjudicated. It is open to all the pupils of the Ecole, and the results have been rather interesting. The prize in painting has been conferred on M. Rouault, pupil of M. Moreau, for a remarkable painting of "Christ Disputing with the Doctors." In sculpture, M. Legrand, pupil of M. Thomas, has obtained the prize for a figure of a "Jeune Enfant en Prière"; in medal engraving, M. Daussin, pupil of M. Ponscarme and M. Thomas, receives the prize for his medallion on the rather absurd subject, "Bienfaisance Allaitant le Génie à l'Ecole des Beaux-Arts." In architecture, a pupil of M. Guadet's, M. Berger, has obtained the prize for a design for the decoration of a public place. The second prize in architecture has been awarded to M. Duquesne, pupil of M. Pascal, for a "Galerie d'Exposition."

The death of M. Edmond Guillaume, the architect to the Louvre and the Tuileries, was briefly announced in our last number. This eminent architect was born at Valenciennes on June 24, 1826. At a very early age he entered the Ecole des Beaux-Arts, as a pensioner of his native town, and studied in the atelier of Hippolyte Lebas. In 1855 he obtained the "Second Grand Prix de Rome" with a design for a "Conservatoire of Music and Declamation"; and the following year received the first "Grand Prix" for his design for an Ambassador's Palace at Constantinople. After fulfilling his term of study at the Villa Medicis, he was commissioned on a visit of exploration to Asia Minor, and published the results under the title "Explorations Architecturales dans la Galatie et la Bithynie." At the Salon of 1863 he obained a medal of the second class, and about the same time was appointed "Inspecteur des Travaux" at the Palais de Justice. Shortly afterwards, as the result of a competition, he was commissioned, along with M. Doublemard, the sculptor, to execute the monument to Maréchal Marcey, in the Place Clichy. In 1866 he received the Cross of the Legion of Honour, and was elected a member of the Société Centrale. About this time he commenced the Hôtel de Ville of Cambrai, completed in 1875. In 1867 he received a medal of the second class at the Universal Exhibition, and in the same year was appointed Inspector of the Palaces of St. Cloud and Malmaison; he was appointed "Architecte des Bâtiments des Sourds-Muets" in 1870, and architect to the Archives Nationales in 1873; became member of the Society of Antiquaries of France in 1874; received another exhibition medal in 1878; was appointed architect to the Palace of Versailles and the Trianon in 1879; architect to the Louvre and Tuileries in 1881; Professor of the Theory of Architecture at the École des Beaux-Arts in 1884; and again received a medal in the exhibition of 1889. M. Guillaume, throughout a career full of occupation, exhibited unflagging energy as well as high artistic feeling in everything he undertook. Among his official work was the restoration of the "Salle du Jeu de Paume" at Versailles, and its transformation into a museum. He gained, in an international competition, the commission for a commemorative monument at Lima (Peru). He was twice appointed member of the "Conseil Général des Bâtiments Civils," and was five times a member of the jury of the architectural section of the Institute.

Among his works of architecture carried out in his private practice, and apart from his official duties, may be named the Hôtel Dusart, Rue Solférino; the Hôtel Bruge at Reims; the Hôtel Van Blarenberghe, &c. He also designed the tombs of Albert Joly at Versailles, of Auguste Magnet, and that of Baron Taylor at Père Lachaise. Of amiable character, though a little cold and reserved in outward manner, M. Guillaume was universally esteemed for his integrity as a man and his knowledge and ability in his profession. He was a scholar of the first order, and we owe to him a very excellent history of the art of ornament. He leaves a son, M. Albert Guillaume, who has already made a reputation as a humorous designer of great talent and originality.

Almost at the same time occurred the death of M. Mozet, an eminent contractor for public works, who had been the friend and collaborator of Viollet-le-Duc. He was engaged over the restoration of a great many of the Monuments Historiques: Nôtre Dame at Paris, the Cathedrals of Reims, Meaux, Noyons, and Senlis, the churches of Louveciennes, Marly, and Orgeval, the château of Pierrefonds, the ruins of Coucy, the Cluny Museum, and many others which give evidence of his intelligence and professional ability in carrying out such work. He was a judge in the Tribunal of Commerce, a member of the juries of the exhibitions of 1887 and 1889, a member of the Chamber of Commerce, and an officer of the Legion of Honour. He died at the age of sixty-nine, after having for thirty years filled a foremost place among the ranks of French contractors, and his death has been a great loss to the building industry of the country.

We have to record also the death of M. Rougelet, the sculptor, who obtained a "second medal" in 1892 for his fine work "Hero and Leander," exhibited at the Champs Elysées Salon in 1892, and to whom we owe also the monument to Greuze at Tournus. M. Rougelet was struck with paralysis while still young, and died in a hospital for incurables at Ivry, under very melancholy circumstances of destitution, in spite of the reputation which some of his works had acquired for him.

* Many English readers may smile at this; but such apparently has been the impression made by the interior of Westminster on the mind of a French visitor; a fact which it is of interest to note.—ED.

THE ROYAL ARCHÆOLOGICAL INSTITUTE AT SHREWSBURY.

BY the desire of the Shropshire Archæological Natural History Society the Royal Archæological Institute, as we announced last week, has this year chosen Shrewsbury and the district as the ground for its annual meeting. The last time Shrewsbury was visited by the Institute was in 1855, but great changes have occurred since then. Most of the men who were the leading archæologists have passed away, and some of the churches and other objects of interest have suffered from injudicious "restoration" or the hand of time.

In point of numbers the present meeting was in no wise behind its predecessors, and a goodly company assembled in the Guildhall, on Tuesday, July 24, at the hour of noon. Here the Institute was formally received by the Mayor, wearing his scarlet gown and gold chain of office, who spoke of the pleasure of welcoming the Institute back to Shrewsbury after an absence of thirty-nine years. In the unavoidable absence of Viscount Dillon, V.P.S.A., President of the Institute, the chair was taken by Chancellor Ferguson, as senior Vice-President present, who, in a few well-chosen words, introduced Sir Henry Howorth, K.C.I.E., M.P., F.R.S., F.S.A., the President of the meeting. The President then delivered a most able and interesting address, in which he reviewed at length some of the methods of recent archæological research, and summarised the more general conclusions that have been arrived at.

After an adjournment for luncheon the members reassembled at St. Mary's Church for a perambulation of the town, under the guidance of the Ven. Archdeacon Lloyd, whose acquaintance with the antiquities of the place made him a most efficient demonstrator. St. Mary's Church, which was first inspected, is a large cruciform building with aisles to the nave, a western tower and spire, north and south porches, and a large chapel south of the chancel. It is chiefly of Transitional Norman work, the nave arcades being particularly fine. This portion of the church was boarded off on account of the repairs necessitated by the recent fall of the top of the spire and collapse of the nave roof. The south chapel is a fine and lofty addition of the middle of the fourteenth century. The chancel was intended to have been vaulted, but this was given up, and the design altered. A fine cross-legged effigy of a knight is the only old monument. All the fittings are modern. The east window contains the greater part of a very fine Tree of Jesse, of the middle of the fourteenth century, brought here from the now destroyed church of St. Chad, in 1788. The north window contains some excellent sixteenth-century foreign glass, with scenes from the life of St. Bernard, which was brought, with other glass in the south chapel, dated 1547, from the church of St. Severin, at Cologne, where it had been removed from Altenburg Abbey. In the sedilia are fixed three fifteenth-century alabaster panels representing the Baptism of our Lord, a clerk praying to the Holy Trinity and Our Lady and Child, and St. John preaching in the Wilderness. These panels did not belong to the church.

The Castle, which was next visited, contains little of interest save the arch of the Norman gateway, the much-altered shell of the thirteenth-century great hall, with a fine seventeenth-century roof and clearstory, and the Saxon mound on which stood the shell keep of Robert de Montgomery.

The old schoolhouse, built at the end of the sixteenth century, and now the free library and museum, is a very interesting structure, with quaint figures of two schoolboys in the dress of the time, flanking the entrance. The museum contains a few interesting things, but the important Romano-British city of Uriconium is very poorly represented, except by the usual pots and pins.

Of the other two churches visited, St. Julian's calls for no special notice, having been rebuilt, save the steeple, in 1749. St. Chad's collapsed suddenly in 1788, and is now represented only by a decorated chapel that stood on the south of the chancel, and by a recently-excavated bone-hole or crypt on the site of the north transept.

The many old half-timbered houses in Butcher Row, and elsewhere in the town, are remarkable for the late survival of Gothic detail. The traceried barge-boards and other portions are quite fifteenth century in character, but the frequent dates show them to have been carved at the close of the sixteenth century. A particularly good example beside the old Guildhall bears the initials D. LL., with a merchant's mark of the date 1570. The Guildhall itself is an interesting building, erected in 1596.

After a brief adjournment for tea, a visit was paid to the fine fragment of the now destroyed abbey of St. Peter and St. Paul, the nave and western tower of its church, which escaped at the suppression through its being used by the parish. The architecture, which is chiefly Norman, calls for no remark, but there is a fine series of tombs, including several brought from St. Chad's church. The best of these is a figure, now in the north porch, of an elderly man in civil costume, with mantle, of a date *circa* 1370. Another figure, of a knight of late thirteenth-century date, has a modern brass above it, asserting it to be the effigy of Roger de Montgomery, who died about 1093. A short chancel and transepts have lately been added from the designs of Mr. J. L. Pearson. Of the abbey buildings nothing is left but a fragment of the south wall of the frater, with a beautiful octagonal reading pulpit of the end of the fourteenth century, with panels containing figures of saints. The inspection of the Whitehall, a fine Elizabethan mansion with charming garden and pigeon-house, the latter retaining its revolving ladder, concluded the day's proceedings.

In the evening, Mr. C. J. Ferguson, President of the Architectural Section, delivered his opening address to a large audience in the Music-hall. He reviewed briefly the different modes of building practised at different times, and especially referred to the extensive use of concrete construction by the Roman and Norman builders, and the manner in which it was made and built up.

Mr. W. H. St. John Hope followed, with an address descriptive of the arrangements of English monastic buildings, illustrating his remarks by a large series of ground-plans of abbeys and priories drawn to a uniform scale.

On Wednesday, the members started at ten o'clock for Pitchford. Here the church was first examined. It is a small Early English structure, with nave and chancel under one continuous roof, the division having been marked by the rood-screen only. The whole of the pews and other fittings are of excellent Jacobean work. The font is tub-shaped and coeval with the church. In the chancel is a good series of late alabaster incised slabs and a fine wooden effigy of a knight *circa* 1270, lying on a wooden tomb of the same date, with an arcade of trefoiled arches containing shields. The chief points of interest were indicated by the Rev. Thomas Auden, who acted as guide throughout the day. Close to the church is Pitchford Hall, which was also visited. It is an exceptionally large and perfect "black and white" house of the end of the sixteenth century, with characteristic carving of a much earlier style. The interior contains some good panelled rooms.

From Pitchford the party proceeded to Acton Burnell, where Mr. Auden described the very interesting parish church. This is a cruciform building without aisles, built by Bishop Burnell after the middle of the thirteenth century. The transepts seem to have been an afterthought. The chancel has some fine work in the east window and a rich trefoiled arcade on the side walls in which the windows are pierced. The transept, or transeptal chapels as they should more properly be called, have three-light windows in the gables and lancets at the sides, and are entered from the nave by richly-moulded arches. The nave is comparatively plain. One of the windows on its north side is very short, and has beneath it the marks of a wooden gallery. Mr. Micklethwaite pointed out that this was an example of what he had termed "high-side windows," the use of which seems to have been to a show a light towards the cemetery to drive away evil spirits. Such windows were usually accessible from the rood-loft, but in this case the window was too far away, and was reached from a special gallery in front of it. The chancel arch shows the cuts for fixing the rood-screen, and, just outside it, a small piscina proves the existence of the usual pair of altars on either side of the entrance. None of the old fittings remain, but there are some interesting tombs in the north transept, especially that of Sir Nicholas Burnell, 1382. That of Richard Lee, 1591, has a quaint figure of a little dog couched within one of the gauntlets that lie beside the effigy. The roofs are ancient. The Rev. Dr. Cox called attention to a funereal garland, of the same character as those which used to be hung up in Derbyshire and other districts over the accustomed seat of a deceased maiden.

A discussion took place as to the probability of an arch on the outside of the north wall of the chancel, with a little window looking into the church, having marked the site of an ankerhold. The arch and window are contemporary with the chancel, but there are constructional difficulties as to the way in which they were covered, and the evidence has been observed by the recent building of a tower in the angle. A row of corbels on the east wall of the transept seems to point to the existence of some such dwelling as that of a recluse.

The remains of the Castle of Acton Burnell were next visited. These consist of the shell of a large square building with towers at the corners, of a type of dwelling intermediate between a castle and a house. The castle was built by Bishop Burnell in the third quarter of the thirteenth century, and, as pointed out by Mr. Hope, was divided longitudinally by a party-wall. On one side of this was the great hall, with cellarage beneath, having at the east end the entrance, and at the other the screens with a gallery over. The other half contained the solar and other rooms, also built over cellars, in the west end of which was the kitchen, with a service stair to the hall floor. Between the eastern towers was a small chapel, now destroyed, and at the opposite end were the garderobes. Close by are the gable ends of a great Edwardian barn, in which tradition says was held the Parliament of 1283-4.

After luncheon the carriages were again entered for a visit to Langley Chapel. This curious little building, so well known for its reputed "Puritan" arrangements, though structurally sound, is in a most deplorable state of neglect, the floor and fittings being covered with a shocking accumulation of filth of every description. The windows are boarded up, and the roof covering having given way in places the wet enters freely and adds to the forlorn appearance of the building. It is now in the hands of Sir Frederick Smythe, Bart., who, although a Roman Catholic, might surely be asked to spend a few pounds in putting the roof into repair, re-glazing the windows, and causing the interior to be cleaned. The chapel seems to have been entirely rebuilt, except the east end, which is late thirteenth-century, in 1601, the old roofs of its chancel and nave being re-used. The original pews, pulpit, and reading-pew are of the reign of Charles I., but the altar and the seats and desks on the north and east sides of it date from the Restoration, when the chapel was partly refitted. Mr. Micklethwaite pointed out that the arrangement of the altar was not Puritan, as was usually stated, but one of those interesting compromises with the High Church party which were characteristic of the time. The Puritan arrangement was a long table set east and west, round which people sat, but here the table was a small one standing north and south, and the communicants knelt round it at desks placed along the walls.

After a glance at the arch of the old gateway of Langley Hall the party proceeded to Condover. Here Mr. Auden welcomed the Institute to view his own church, the chief features of which he pointed out. The chancel has been lately rebuilt and the two Norman transepts are the oldest parts of the church. The nave was rebuilt on the site of the older nave and aisles in the middle of the seventeenth century and covered by a remarkably fine hammer-beam roof of wide span. This has unfortunately been recently entirely "restored" in imitation of the old, of which only the westernmost truss is left. The windows too, have been completely renewed and apparently made "Gothic," and the panelled buttresses alone remain to show what an interesting chapter in the history of English church architecture has been hopelessly tampered with. The tower seems to have been rebuilt at the same time as the nave. The church retains no old fittings, but in the north chapel are several interesting monuments, including that of Thomas Owen, Justice of the Common Pleas, *temp.* Elizabeth. There is also a pathetic monument wrought with unusual power and skill to the memory of the wife and infant of the present owner of Condover, Mr. Cholmondeley, who himself designed and carved the beautiful recumbent figure.

By the kindness of Captain Cholmondeley, the present occupant, the members of the Institute were allowed to inspect Condover Hall, one of the finest Elizabethan mansions in the county, with beautiful gardens and a valuable collection of pictures. In the evening the Antiquarian Section was opened in the music-hall by Mr. Stanley Leighton, M.P., F.S.A., who took for the subject of his presidential address the changed and ever-changing condition of the county as illustrated by its monasteries, castles, houses, and their inmates. Mr. Leighton also called attention to the singular lack in existing ancient houses of

their furniture and fittings; those now to be seen being in almost every case the result of modern collection. Mr. Micklethwaite then delivered an address on monastic life, in continuation of the subject introduced by Mr. Hope on the previous evening, in which he briefly reviewed the origin of monachism and the rise and growth of the different religious orders. He also showed from the Cistercian rule, which was practically a reversion, in all its austerity, to that of St. Benedict—what was the daily life of a monk. Mr. Stephenson followed with a paper on the "Monumental Brasses of Shropshire," which was illustrated by a fine and almost complete series of rubbings of all the remaining examples.

On Thursday morning, about one hundred members of the Institute and their friends proceeded by train to Shifnal, and thence in carriages to Tong, where the church was described by Mr. Griffiths. The building, which is chiefly of the fifteenth century, is a well-known example with an exceptionally fine series of tombs and recumbent effigies. The chief features of these were pointed out and described by Mr. St. John Hope. The three finest are of alabaster, and commemorate Sir Fulk Pembridge (*circa* 1410) and his lady, who is habited as a widow; Sir Richard Vernon and wife, *circa* 1452; and of Richard Vernon and Margaret, his wife, *circa* 1517. The Pembridge effigy is remarkable for the leather cap shown inside the tilting helm, which is also surmounted by a beautiful maiden's head, with long plaited "pigtail" by way of a crest. The charming Late Perpendicular chapel on the south side is full of interest. Besides its fan vault and pointed walls, it retains its original floor, altar-piece, and stone altar, over which are the marks of its "table" or reredos, with a painted dedication inscription and figures of the rood and SS. Mary and John. The inscription records the building of the chapel by Sir Arthur Vernon, priest, in memory of his father and mother, whose tomb stands under an arch on the north side. On the floor is the founder's brass, and on the wall above a half-effigy of him on a canopied bracket.

The presence of seven consecration crosses on the altar slab was ingeniously explained by Mr. Micklethwaite, who showed how the slab was an old one brought from elsewhere, and that two of the crosses had been covered by the table which stood on the altar. The chapel was formally consecrated on its completion, as is shown by four dedication crosses still painted on its walls, and when the altar was also hallowed, two new crosses were cut on it in advance of the reredos. In the vestry of the church is an embroidered pulpit or altar hanging, of the time of Charles I., and with the plate is preserved a splendid crystal and silver-gilt covered cup of the sixteenth century—apparently, a German drinking cup. Before leaving the church, Mr. Cranage called the attention of the members to the south arcade of the nave, which he showed, from the existence of the hood-mould, on the aisle side only, had originally formed the north arcade of the nave before the church was rebuilt.

After lunch the party drove to Lilleshall Abbey, where are the extensive remains of a house of Black Canons. The chief features were pointed out by Mr. St. John Hope, who called attention to the curious aisleless cruciform church and its remarkable division by screens, which could still be traced into (1) presbytery and choir; (2) retro-choir; and (3) nave, this last being further divided by a wall; and (4) its western part used as a separate chapel for guests and strangers. Mr. Hope described the results of extensive excavations made in 1888, when, amongst other things, a large Lady Chapel was traced on the north of the church, and pointed out the remains of the chapter-house, frater, and other buildings. In the evening the members were received by the Mayor and Mayoress at a conversazione in the Music Hall, where a complete collection of the maces and other insignia of Shrewsbury and the other Shropshire boroughs was exhibited. These were briefly described in the course of the evening by Mr. W. H. St. John Hope.

Friday morning was devoted to a meeting of the Historical Section in the Music Hall. The President of the section, the Rev. J. Charles Cox, LL.D., F.S.A., delivered the opening address, the subject of which was the history of Roman mining in Shropshire and other counties, with especial reference to workings for lead and iron. Sir Henry Howorth added some valuable observations on the sources of the various minerals used in ancient times. A paper was also read by the Rev. W. G. D. Fletcher, F.S.A., on the fine series of Municipal records belonging to the town of Shrewsbury, some of which he also exhibited.

After an adjournment for luncheon the members drove to High Ercall church and Hall, which were described by the Hon. and Rev. G. H. F. Vane, and thence to Haughmond Abbey. The remains here were described by Mr. Hope, who pointed out the scanty ruins of the church, the chapter-house, the frater and its subvault, with the adjoining kitchen and the abbot's *camera* beyond, to this was attached a very fine hall of the first half of the fourteenth century, probably used as the infirmary hall, and served from the convent kitchen, with which it was connected by a pentise. The beautiful Transitional doorways into the church and chapter-house are remarkable for the fourteenth-century figures of saints which have been carved out of the jambs.

Saturday morning was occupied by the annual business meeting of the Institute, which was attended by members only. After lunch, carriages were in readiness to convey the party to Wroxeter, the site of the Roman city of *Uxiconium*. The remains of the great *basilica* and of the fine series of baths that adjoined it were fully described by Mr. George E. Fox, who strongly urged the desirability of a systematic excavation of the site on the same lines as the operations carried out at Silchester. Large sums of money could be expended and scholarships founded for the prosecution of such researches abroad, while the investigation of the remains in our own country, which surely would yield part of its history, was systematically neglected. A move was next made to the parish church of Wroxeter, which was described by the Vicar, the Rev. R. Steavenson. Mr. Cranage pointed out the architectural features of the building, and suggested that the north wall of the nave was of Saxon date and the chancel Transitional with early English insertions. The tower is a strange mixture of used-up pieces of carving and mouldings, all Mediæval, and may be made out of materials brought from the ruins of Haughmond Abbey. The chief features of the three tombs in the chancel, including a fine figure of a judge in his robes and collar of SS., the small "weepers" on a somewhat later tomb representing ladies with nosegays, and an effigy in armour, with mutilated hands concealed by sheet-iron gauntlets, were pointed out by Mr. Hope. By permission of Mr. R. A. West an opportunity was afforded the party of examining some interesting capitals and other Roman remains built up in his garden as a rockery.

On Monday, July 30, the members left Shrewsbury by the 10.5 a.m. train for Ludlow. Here the fine church, with its grand series of screens and tombs, its stained glass and stallwork, was described by the Rev. Prebendary Clayton. From the church the party proceeded to the castle, which was described by Mr. W. C. Tyrrell. The Norman keep has had its original arrangements obscured by the rebuilding of the north wall and staircase in the fourteenth century, but the fine thirteenth-century hall, with its complete appendage of offices at one end and the state apartments at the other, was examined with much interest, as was the curious circular nave of the chapel. After an adjournment for luncheon at the famous old inn, "The Feathers," the party returned by train as far as Craven Arms to allow of a visit to Stokesay. The history and principal features of this fine thirteenth-century hall and its appendages were described by the Rev. J. D. La Touche, M.A., who illustrated his remarks by an excellent series of drawings and ground plans. After an inspection of the little church hard by, which contains a fine canopied double pew of Jacobean date, the party returned to Shrewsbury by train. In the evening the concluding meeting of the Institute was held in the Music-hall, when votes of thanks were passed to the several gentlemen who had so kindly thrown open for inspection their houses and churches, &c., to those who had ably elucidated and described the various features of interest. On Tuesday the members assembled at 10 a.m. and drove to Buildwas. Here the ruins of the Cistercian abbey were demonstrated by Mr. W. H. St. John Hope, who pointed out the various evidences of the singular division of the church into presbytery, monk's choir, retro-choir, and choir of the *conversi*, and explained the reason of the division wall built in front of the piers throughout the length of the church. Mr. Hope called attention to the admirable example afforded of the normal and primitive Cistercian arrangement, which he also suggested had continued till the Suppression, and not been disturbed as at Fountains and Kirkstall. Though the church only equalled in length the nave of Kirkstall, it presented a miniature representation of all the original arrangements of that interesting church. After inspecting the chapter-house and other remains of the conventual buildings, the party resumed the journey to Wenlock, where a halt was made. After lunch a visit was paid to the extensive ruins of the great Cluniac Priory of St. Milburga, which were described by Mr. W. H. St. John Hope. By the courtesy of Mr. C. Milnes-Gaskell an inspection was permitted of the very interesting fifteenth-century group of chambers forming the east side of the farmery cloister, known as the "prior's house." Mr. Hope showed that this really consisted of at least three complete sets of chambers, communicating by a common passage or gallery built over the east cloister alley. After a brief inspection of the parish church, which was described by Mr. Cranage, and of the maces and charters of the Corporation of Wenlock the party returned to Shrewsbury, and so the meeting came to a most successful end. The members were favoured by fine weather throughout, and the arrangements made by the committee were excellent and most ably carried out by the Hon. Director, Mr. E. Green, and the Hon. Secretary, Mr. M. Stephenson. The most commendable punctuality was maintained throughout. Next year we believe the Institute is to meet in Yorkshire, perhaps at Scarborough, if satisfactory hotel arrangements can be made.

BRITISH INSTITUTE OF PUBLIC HEALTH:

THE ENGINEERING AND BUILDING CONSTRUCTION SECTION OF THE CONGRESS.

The meetings of the Engineering and Building Section of the British Institute of Public Health, which were held at King's College, commenced on the 26th ult., when Professor Banister Fletcher, President of the Section, delivered his Presidential Address, the greater part of which was published in the last issue of the *Builder*.

Mr. Douglass Mathews, F.K.I.B.A., commented upon several of the points of the President's address. It was a matter for satisfaction, he observed, that before long they would have a less number of 9-in. walls. Under the Act which would shortly come into force, one story would be the limit, and to that extent they would get rid of what had no doubt been a great source of danger to the health of those who occupied houses with 9-in. brick walls. As to plastering, he agreed that of late there had been an improvement in this direction in London, owing to the care now bestowed in the mixture of the material, and he thought the authorities were to be commended for insisting upon the use of better material. He could not join the President in his condemnation of the "wash-out" closets, but quite agreed with him as to the valve closets, as well as with his remarks upon the necessity of having a three-gallon flush. He supported the idea of having public baths and washhouses in the City of London, and was of opinion that a site might be secured on the Thames for such a purpose. Most people were in favour of wood-paving, as against asphalte, but he always looked upon wood as an absorbent; if something could be done to make it less so, wood might be very valuable for general paving.

Alderman Clements (of Henley-on-Thames) thought that for some years they had been greatly in error in attaching importance to large-sized drain-pipes. His own experience was that a 4-in. glazed stoneware pipe was large enough for any house-drainage. He also emphasised the same opinion with reference to the sewerage of towns. Our sewers, generally speaking, were far too large. At Henley they had adopted Mr. Shone's pneumatic system of drainage; they had no larger pipe in any part of the town than 7 in., and they never experienced a blockage. In connexion with building construction, he pointed out the necessity of the site of every structure—whether that building were intended for a dwelling-house or for workshops—being covered with cement concrete, and hoped that would be one thing which would be insisted upon in the future. As to the ventilation of sewers he hoped that the old-fashioned ideas of doing this work by street-gratings were now exploded, and that, as a rule, pipes up the sides of houses would take their place. Mr. Clements also advocated the use of wood-block flooring and cement skirtings, especially on the ground floors of houses.

Mr. J. Hinton was of opinion that the ventilation of large blocks of houses needed attention, and not only that of street sewers. The size of drain-pipes depended upon the fall. He believed in a proper size to a proper fall.

Mr. Lindley urged that for the ventilation of sewers it was necessary to combine street gratings with pipes run up the sides of houses.

Mr. Kimber (Plumstead) expressed himself in favour of wood paving, but impressed upon the congress the necessity of seeing what could be done to make it less unhealthy.

Mr. Charles Jones, M.Inst.C.E. (of Ealing), read a paper on "Dust and Refuse Disposal." The writer commenced by saying that the rapid increase of population in a very large number of towns, with the consequent relative increase in the pecular mixture known as "dust" or house refuse, emphasised the importance of the subject of its disposal. After giving a brief reply to the question "What is dust?" Mr. Jones turned to the important question—What is the best mode of dealing with house refuse? The method now principally employed, viz., treatment by fire, was not a new one, for back in what were sometimes called the "dark ages" fire was the great remedial agent. He could not but express the very strong opinion that at the present, at any rate, it was to the furnace that they had to look for the best means of dealing with the house refuse difficulty. In his own district there were not a few houses where the whole of the house refuse, including vegetables, was destroyed in the kitchener, and that which could be done in some few houses, where care was taken, could be done in the bulk if a proper recognition of the economics of the kitchen were fairly impressed upon the minds of those who served them in their homes. They were, however, necessitated to deal with things as they found them, and must consider the best mode of removing house refuse quickly and economically. The material itself was a sanitary nuisance, and he deprecated the systematic picking over or sorting which was once the general custom, and was still carried on at one or two dépôts. It was now some twenty-five years since the first destructor furnace was erected, and although for a long time difficulties had to be dealt with and opposition was created, nothing like a reasonable opposition could now be raised. Some fifty of the most important towns had successfully adopted this mode of treatment, and in some portions of the Continent and in the Colonies the same work was being carried out. After naming several makers of destructors, the reader of the paper said the furnaces might be divided into two classes—a low temperature and a high temperature, the one dealing with the refuse at a moderate heat, and at a minimum expense, and the other destroying somewhat more per cell, but at the same time incurring a very high expense per cell per annum. The low pressure utilised the secondary furnace, or fume-cremator, for the destruction of the gases (and should he say for utilising the products of the cells?) which would otherwise pass up the shaft, whilst the high pressure professed to deal with the gases in the cells themselves. His own experience, which had been with the low temperature for a cremator, induced him to give the preference to that particular mode, the very simplicity of the apparatus being an important feature, in his own view; and although he was not getting quite so much steam-power as might otherwise be obtained, he carried out most effectually the object he had in view in the destruction of the refuse, and the utilisation of its products, at the lowest possible cost. As to the utilisation of the heat arising from the crematory process, it was the duty of every municipal authority to make use of all that could be utilised, but the sanguine views taken by many people of the high value of the benefits to be derived in this direction only tended to disappointment in the result, and an adverse opinion upon a most useful municipal appliance. That a small amount of steam-power might be obtained there could be no doubt. It was evident, however, that the question of horse-power was an extremely variable one, and, looking at the matter from an electric lighting point of view, no installation would be erected which depended upon the amount of heat derivable from the refuse destructor. At Ealing, where the clinker was also used to its fullest extent, they were laying down a very complete electric light installation at the sewage works. The installation would be complete in itself, but would be so connected with the destructor that the surplus heat, be it more or less, would be entirely utilised. They looked forward to this installation being a great success, not only as an electric light installation, but also as the first district where the destructor had been made conjointly a part of the system.

A paper on "Electric Lighting as a Health Agent," by Mr. W. H. Preece, F.R.S., was next read. Mr. Preece said that the most prominent application of electricity was for lighting purposes, and the improved sanitary conditions of an establishment so lighted must be apparent to all. The writer referred to the necessity of electrical engineers devoting their time and experience to solving the problem of cheaper production. It might, he said, be asked what modifications were necessary in electric light stations whereby a third unit could be produced and at the same time pay a fair dividend to the proprietors. Water power was practically unavailable in this country, and steam was the principal motive power. Why not use gas itself as the prime mover? After dealing with the results obtained by the gas-producing apparatus of the Illuminating, Heating, and Power Gas Company, Limited, Manchester, Mr. Preece said that one of the greatest problems the City of London had to solve was that of local transit. The present congested state of the streets rendered it imperative that other methods of transit whereby the ever-increasing traffic of London could be properly dealt with might be adopted. In this connexion he gave a detailed account of the City and South London Electric Railway, and alluded to the number of new lines in and across London based on the same principle, and already authorised by, or seeking powers from, Parliament. This line had many advantages which would commend it to those who had the question of the improvement of public health under their especial consideration. The entire absence of smoke and dirt, and unpleasant odours, only too prominent on other underground lines using steam locomotion, was in itself an immense advantage in adding to the comfort and convenience of passengers using the line. Mr. Preece spoke of the treatment and disposal of sewage as one of the principal sanitary questions of the present day, and pointed out the advantages of the process known as Webster's Electrical Process for Sewage Purification. There were at present, in the writer's opinion, however, certain disadvantages in connexion with this process, which must be eradicated before the engineers could consider this method of treatment perfect.

"Softening Public Water Supplies" was the title of a paper read by Mr. W. G. Atkins, C.E., who observed that Dr. Clark's process of softening by lime was the only practical method yet discovered. The sixth report of the Rivers Pollution Commission on the Domestic Water Supply of Great Britain, he said, was a remarkable volume, and contained analyses of water from all parts of the kingdom. Every system of filtering, &c., was carefully examined by the Commission, and the lime process strongly recommended for waters containing carbonate of lime, this being the large majority of waters in England obtained from rivers or wells. The process, the writer claimed, exerted a greater purifying power than any system of filtration only, and, if properly carried out, the water contained no trace of the lime which had been added; it was purified, and the total solids were greatly reduced. He held that objections that had been urged against the lime treatment proved to be unfounded if the process were accurately carried out. As to the savings effected, Mr. Atkins said that when water was softened the consumption of soap was reduced by one-half, tea was 25 per cent. stronger, and incrustation in boilers and kettles was entirely prevented and fuel saved. The cost of softening was one farthing per 1,000 gallons for interest on plant, and one farthing for working expenses, making together ½d. per 1,000 gallons. An average household could for ½d. effect a saving worth 1s. 6d. per week, and a workman's family, for ¼d., one of 6d. The first cost of plant was proved in a large town to be 16s. per house, and as each householder obtained savings valued at 1s. 6d. per week, or 3*l.* 18s. 0d. a year, the investment in softening the plant, after deducting 1s. 1d. for working expenses, might be said to pay over 400 per cent. per annum. Those figures were based on strict experience, and were the result of many years' careful observation. Mr. Atkins recorded the adoption of Dr. Clark's system of softening hard water supplies, and, in conclusion, said the time would come when it would be as rare to find a town supplied with hard water, rather than soft, as it was at the present time to find a town without any water supply at all.

Mr. Fraser (of Kingston-upon-Hull) said he was attending the congress for the purpose of learning something with reference to refuse destruction and subjects relating thereto. He wanted to take back some valuable information, so that he could impress upon the northern mind the wonderful advance of the southern mind, and the advantages possessed by southerners. He hoped his colleagues in Kingston-upon-Hull would be persuaded that the only way to get rid of the house-refuse was to destroy it by fire.

Mr. Alliott, who said he had been interested, with a few others, in the destruction of refuse by fire from its first inception, referred to the varied composition of refuse, differing as it did in various districts, in the several parts of those districts, and in the summer and winter seasons, and said that regard must be had for these conditions. Where the refuse was difficult of treatment it should be considerably dried before any attempt was made to burn it, but where they got material of the better class—in fact, as it approached to the character of coal—so they might treat the material more and more as they did coal. At the present time a destructor was being erected at Birkenhead, in which some of the cells were constructed to take away the products of combustion from that part of the furnace which was the hottest, while some of the other cells or furnaces were being constructed so that the products of combustion should pass over and dry the material before it passed to the furnaces. In the early forms of destructors it was possible to obtain steam-power from the refuse. Southampton had a destructor, which had been in use some twelve years at least, and from the very commencement they had had sufficient power to work their Shone ejectors, which were used for the purposes of raising and discharging sewage. In addition, they had let off compressed air to a neighbouring town, and had found steam for electric lighting purposes. Where they got improved material they could also supply a large amount of boiler power. For most purposes for which the heat provided by destructors could be used there was this disadvantage, that the destructor was obliged, in order to work economically, to work day and night without stoppage, whilst the heat, in the shape of power, was only required for a small portion of the twenty-four hours. In further remarks, the speaker dealt with the storage which this state of things necessitated.

Mr. G. Watson (of Leeds) described, with the aid of some diagrams, the Horsfall's Patent Refuse Furnace.

Mr. Monks (Chairman of the Sanitary Works Committee, Warrington) related the steps which had been taken in that town towards the destruction of refuse, and said they had managed to hit upon what he ventured to think would prove a great success. Their furnace had been at work for twelve months, and was destroying twenty-four tons of refuse per twenty-four hours.

Mr. W. Spinks also referred to the Warrington destructor, and said that Dr. Carter Bell had analysed the gases from it, and there was no trace of carbonic oxide.

After a few remarks from Mr. H. Ransom, C.E., and a brief reply from Mr. Jones, the section stood adjourned.

On Friday, Mr. Lewis Solomon, F.R.I.B.A., read a paper entitled "A London Architect's Troubles with the Local Sanitary Authorities." At the outset he pointed out that an architect was assumed to try and do sanitary work satisfactorily and economically, while each Local Authority had certain special requirements with which he must comply. He then proceeded to deal with the varying requirements of the many parishes in London, with reference, among other things, to the size of drain-pipes, pipe-bedding, the inspection chamber, inlets, outlets, apparatus, connexions to road, and the testing of pipes. Considerable difficulty lay in the fact that the same set of by-laws was not used by the County Council, which governed the whole of London, and each separate vestry, which governed only a part of London. One great trouble that almost all architects and builders complained of was the "red tape" of the subordinates, who would not go out of their routine to save considerable waste of money. In some parishes a certificate that the drains were to the satisfaction of the Sanitary Authorities was insisted on; in others they absolutely refused to give a certificate at all. The powers of the local vestries and the London County Council, if enforced, seemed absolute. Fortunately, however, these powers were used with discretion in most cases. Some of the by-laws of the County Council, the paper further pointed out, were quite impracticable. The object of this paper was to get some uniform system of regulation. The main requirements, such as sound and sufficient work, the writer argued, should be alike in all parishes; while minor matters, such as special apparatus, should be left to the discretion of the party doing the work. He suggested that a committee be appointed to treat with all the London vestries

for a uniform set of rules in regard to drainage work.

Mr. W. Kaye Parry, M.A., submitted an interesting paper on "Sewage Effluents." The author stated that it was not his intention to review the vexed problem of sewage purification, but to elicit information with a view to placing the question of sewage effluents upon a more rational basis. Having alluded to the causes which contributed to bring the subject to its present acute stage, he proceeded to trace the successive steps which had marked the evolution of the sewage problem. The various Royal Commissions which had investigated the condition of the Thames and other rivers were referred to as illustrating the history of sewage purification in its relation to river pollution. The writer then directed attention to some of the practical aspects of the pollution difficulty, and propounded a series of questions to which he said authoritative answers were demanded. The possibility of safely discharging crude sewage into rivers of relatively large volume was referred to, and the opinions of Professor Percy Frankland and other chemists were quoted. The author also alluded to the bacteriology of sewage effluents, with special reference to the vitality of the typhoid bacillus in river water; in this connexion the Massachusetts experiments were briefly touched upon. The pollution of the foreshore of sea-side health resorts was considered, and the necessity for legislation for the protection of the coast-lines was insisted upon. Tidal estuaries, in the writer's opinion, came under the same category, and the familiar case of the River Thames was cited as an example. The paper then dealt with the position of the sewage purification problem up to 1884, prior to which date, it was pointed out, the bacteriology of sewage had scarcely received any attention. The last decade certainly marked the dawn of a new era, in which the study of biology, both of water-supply and sewage, was assuming an ever-increasing importance. The researches of the French chemists and of Warrington were said to throw a flood of light upon the real effect of intermittent filtration. Standards of purity for effluents were advocated, the recommendations of the Rivers Pollutions Commission were briefly criticised, and two or three other practical alternatives were offered, including a series of negative tests suggested by Professor Hartley, F.R.S. Analytical data were, in the writer's opinion, somewhat illusory, as evidences of the propriety of permitting the effluents which had been analysed to be delivered into rivers and other water-courses. The value of bacteriological examinations was referred to, with special reference to the alleged advantage of producing by purification a sterile effluent. In the remainder of the paper a few other debatable points, such as the necessity for land treatment as a supplement to chemical methods of purification, and the possibility of dealing with the discharge from storm overflows, were mentioned.

Mr. James Thomson, C.E., had promised to open a discussion upon "The Sanitation of Flats," but was unavoidably prevented from attending.

Mr. J. Trenner (Chairman of the Law and Parliamentary Committee of the Holborn Board of Works) said he was particularly struck with the observations of Mr. Solomon as to the want of uniformity existing among Local Authorities, and expressed his willingness to do what he could to bring about a conference with a view to getting uniformity of by-laws.

Mr. Kimber (Plumstead) referred to the experiments being made by the London County Council at Barking in the sand filtration of sewage effluent and hoped they would prove thoroughly successful. He agreed that the discharge of sewage effluent into the river was injurious, and said he trusted the Bill now before Parliament dealing with the matter would pass.

Mr. Spinks spoke of the difficulty of dealing with trade effluents, and, touching upon the question of the pollution of rivers used for drinking purposes, cited the case of an outbreak of enteric fever on the Tees, which was traced to the water supplied by two Authorities whose intake was below a point where sewage was allowed to enter the river. With regard to the subsequent filtration through land, in the north of England that was a difficult question, on account of the absurd values placed upon land by the owners of it.

Mr. Lindley thought great importance lay in the fact that "prevention is better than cure." In his opinion Urban Authorities should not only have power to watch and control the carrying out of the drainage of houses, but that they should control those making alterations to the drains to give notice of their intention, so that the work could always be properly superintended.

Mr. Hannam (Leeds) alluding to the different systems of traps, &c., adopted by various authorities, said that in Leeds they used a specific kind of trap, and refused to allow any other. It seemed to him extraordinary when he went into a suburban district to see a Local Authority using the very thing they were debarred from using in a place like Leeds. He urged that some uniform system should be adopted.

Mr. J. B. London described the trouble which Coventry had experienced in the question of its sewage disposal, and the successful opposition of the Lord Lieutenant of the County to a scheme which had even been approved by the Local Government Board. They would, he said, have to apply for a further extension of time for dealing with the matter. They seemed there to be "between the devil and the deep sea." They wanted to remedy the nuisance already existing, but were not allowed to because they proposed to turn their effluent into the river.

Dr. Anthony Roche (Dublin) condemned the practice of many public institutions in discharging typhoid and other such organisms into the public sewers without the least attempt, or in some cases only feeble attempts, to destroy those organisms.

Mr. Batley (Leeds) said that in that town they were trying to improve their system of irrigation. If it could be proved that sand filtration was better than irrigation he should be glad of information on the subject. They wanted to get rid of the solid matter that was injurious, and make it beneficial, and to know how best to filter or clarify the water.

Mr. Turnbull (Bedford) was surprised to hear the last speaker's remarks, seeing that what he believed to be the best system of sewage treatment originated in that very neighbourhood. He referred to the Carbonised Refuse System of sewage purification, invented by Mr. Jagger, of Leeds, and now being successfully applied at Baildon, in Yorkshire.

Mr. J. H. Dyer (of Alton) also spoke, and was followed by Mr. Brown (of Burgess Hill), who referred to the success with which he had managed a small sewage farm for some four or five years in that district.

Mr. Kaye Parry and Mr. Solomon having briefly replied on the discussion, the section again stood adjourned.

On Monday, Mr. Campbell Douglas, F.R.I.B.A., opened a discussion on "The Planning of Fever Hospitals," with an exceedingly able paper. The growth of our large towns, he said, was every year making it more and more necessary to battle with all kinds of sicknesses, and especially with fevers and other infectious diseases. For this purpose there ought to be in all cases power for municipalities to erect and maintain hospitals, supporting them from the rates. The late competitions for the two fever hospitals in London had brought out many interesting points in planning—some to be commended, possibly some to be avoided. After referring to the scope which existed for the skill of the architect in planning such an institution, the writer said his object was to state some general principles which should be attended to in any well-considered plan. Dealing with the question of locality, he said that in the case of a large town or city he saw no reason why the building should be placed very far away, for fear of risk to the public health; in fact, it was necessary for the hospital to occupy a central situation, because many patients might suffer seriously if they had to be conveyed some miles to it instead of to one at hand. He next spoke of the nature of the site, and coming to the subject of general arrangement, said that a fairly accurate knowledge of the daily routine of such institutions was the best guide as to how the various parts were to be relatively placed. Convenient access to all portions of the administrative departments must be observed, so that they might be easily reached from the outside without coming in contact with the wards. The wards should, in this country, be placed with their long axes lying N.W. and S.E., as this would ensure the maximum of the sun's rays in a land where they had not too many of them. After the sun, fresh air by means of ventilation was the chief point which claimed attention. As to the distance at which wards should be placed from each other, he did not think there was any hard-and-fast rule at which this might or ought to be fixed. Obviously, the fewer patients that were placed on the acre the greater must be the expense in ground, construction, and upkeep, as well as in management. It was doubtless true that that hospital where the greatest percentage of cases was cured was the cheapest, if one considered the value of human life, but it did not follow that the most expensive hospital was thereby the most efficient. Common-sense enlightened by knowledge would direct where and how the kitchen and various food apartments should be situated, and so also with regard to the washing-houses and laundry, the mortuary, and the facilities for post-mortem examination. But it would be advisable that all important hospitals should be provided with a well-furnished laboratory for microscopic research and another for bacteriological preparations. The question of the number of patients to be accommodated per acre depended, the writer held, mainly on the system of ventilation adopted. After refering to certain interesting features of the Belvedere Fever and Smallpox Hospital at Glasgow, the City Fever Hospital of Edinburgh, the new Hamburg-Eppendorf Hospital, the Urban Hospital of Berlin, and Virchow's fever hospital for children at Berlin, Mr. Douglas remarked that it was not easy to say with certainty what ought to be the cubic space allowed per bed, because he thought it was very much a question of the supply of fresh air. It seemed to be the commonly-received opinion that somewhere about 2,000 cubic ft. should be allowed per bed, and that not less than 3,000 cubic ft. of fresh air should be allowed per hour. Obviously it was the business of the architect to place that 2,000 cubic ft. of fresh air as conveniently as possible within the patient's reach. In other words, it should not be so much above him as around him. The writer emphasised that in a model hospital the wards should stand above a thoroughly dry and well-ventilated upper story. He then dealt with the construction of the walls, the floors, the ceilings, and the windows. He thought means should be used for the ventilation under the beds being more thorough than it often was, and also that there should be no parts in the wards where the air stagnated when some management might prevent this being the case. Care must be taken that the water-closets were abundant and classified, that no healthy person should use those provided for patients, and that suitable places should be given for the sanitary and effective disposal of all discharges. As to heating, personally he liked open fire-places where they could be had, but obviously they would not suit large wards, and the artificial system of hot water or steam-heated pipes would have to be adopted, or warmed air might be forced into the wards. Upon the question of accommodation the writer said this should be provided for one per 1,000 of the population in a normal state of health, but it would be wiser to provide for a half more.

"The Architectural Features of Elementary Schools from a Public Health Point of View" was the title of a paper read by Mr. T. J. Bailey, F.R.I.B.A., Architect of the School Board for London. The writer said that the crowding together of large numbers of families on small areas of land had led to the necessity of erecting, in some cases, schools of an exceptional size. He referred to the schools built in the earlier days of school boards, and pointed to the growth in this direction during the last twenty-one years, that being just the time since the first school built by the School Board for London was opened. The weak points of the earlier schools were:—(1) The want of access to the class-rooms independent of the way through the main room, to avoid disturbance of the classes; (2) The need for dividing up the main room to isolate the classes; and (3) The distressing and bad effects of back-lighting. As to the sites, many of the earlier schools were built on such small plots of land, frequently almost entirely back land, that their light and air suffered seriously. This was not likely to occur in the future, as the Education Department now required that there should be a minimum of 30 square feet of open playground for each child. This requirement insured that the site would be sufficiently open and airy for its purpose, and to secure that the offices were far enough away from the main building as not to commit a nuisance. Mr. Bailey then proceeded to describe the Hugh Myddleton School, opened by the Prince of Wales last December, and he stated among other things that he had been in and out of that building many times during the last winter, and there was an entire absence of what was known as the "school smell," with which all who knew the schools of twenty years ago were familiar. It was not much to be surprised at, considering what schools were when school boards began their work, that so much development had taken place in so short a time.

Mr. E. T. Hall, F.R.I.B.A., after referring to

the difference of opinion which existed among architects as to the best position for the administrative portion of a hospital, in respect of the hospital itself, said that a great point which Mr. Douglas touched upon was that of getting sunlight and air into the wards. The getting of as much sun as possible upon all the walls was of the gravest importance. The reader of the paper also said there were places where the air stagnated. He (Mr. Hall) thought it was well to put a window close to the angles of the room, so that both sun and air could be obtained. With regard to the danger to public health, he believed statistics showed that at a distance of 40 ft. from an infected building there was no contamination whatever. Of course, in the surrounding area it was very desirable to have trees, and therefore in the choice of site a rural situation was preferable. Speaking on the subject of ventilation, Mr. Hall expressed himself in favour of pure and undiluted air coming straight into the rooms as much as possible. He had heard that where windows were open close to the ceiling in fever wards, and there was a through current, the duration of a scarlet fever case could be shortened some six or seven days as compared with a room where such facilities did not exist. If that were so it said much for natural ventilation. On the other hand, he was told that in Glasgow Infirmary equally good results had been obtained by artificial means of propelling air and heating that air artificially as it went in. Mr. Douglas had spoken of the desirability of having open stories below the wards. The Metropolitan Asylums Board insisted upon that condition in their modern hospitals, and it seemed to him very important that there should be a through current of air underneath the ward.

Professor Roger Smith, F.R.I.B.A., said the point which had always struck him with regard to hospitals as requiring determination was that of ventilation. If one considered the great difference between summer heat and the extreme cold of a keen winter, and the dryness of one period and the dampness of another, it seemed very difficult, if they depended solely upon open windows, to devise a scheme of thorough ventilation. He could not but believe that with a climate like ours it was almost an essential that there should be a good trustworthy means of artificial ventilation, which at any rate could be relied upon during the night and throughout bad weather. As to the situation of the administrative portion of the building, it had always appeared to him to be wise to keep it as far as possible away from the sick wards. The result of the recent competitions, however, had certainly shown that the authorities did not hold that view, the successful plans in both instances being distinguished by having their administrative portion in the most convenient position; that was to say, in the centre of the plot of land, but with sick-wards on both sides.

Resolutions were then passed in sympathy with the objects of the Congress and certain of the opinions expressed in the course of the discussions. The following was among those adopted:—

"Being strongly of opinion that more information is required on all sanitary appliances, ventilation, and sewers, and also on matters connected with building construction, this section urgently recommend this Congress to appoint a small standing Committee with power to act until the next Congress. That such committee, by circular or otherwise, appeal to all local authorities throughout Great Britain and Ireland to aid them in the work; and that they also appeal to the City companies and to other bodies and individuals for funds in making the necessary scientific researches. That such committee from time to time make reports of the work they are doing."

The last paper read was by Mr. G. Binswanger, M.I.E.E., on "Electric Power, Heating, and Lighting, with Demonstrations and Notes on their Possible Influence on the Architecture of the Future." This was commenced at Monday's sitting, but time did not allow of its completion until the following day. Mr. Binswanger, in a very interesting way, showed some of the latest developments of electrical science, mainly in the field of domestic appliances, with a view to discussing the advantages they might offer to architects seeking to improve the present ordinary methods of motive power, heating, lighting, ventilating, cooking, &c. He claimed, among other things, that, if they called electricity to their aid, a house could be built without flues, without chimneys, without hot-water pipes; and yet perfectly heated, perfectly ventilated, and with perfect cooking arrangements. As to cost, he held that it was not excessive, or beyond the means of the moderately rich, even at the price at which the current was being generally sold; but there were sufficient indications and grounds at hand to lead them to expect that one day electricity would also supply energy for light, power, and heat to the poor.

On Tuesday Professor Banister Fletcher brought up seven important resolutions, one of which insisted upon the necessity of providing municipal baths for the City of London, another upon the necessity of the sanitary inspection of railway carriages, and a third upon the need of further sanitary research, especially in relation to sewers and to building construction. These resolutions were remitted for further consideration

BUILDERS' BENEVOLENT INSTITUTION

ANNUAL MEETING.

THE forty-seventh annual meeting of this institution took place on the 26th ult. at the offices, 35, Southampton-row, Bloomsbury. Mr. George Plucknett, J.P. (hon. treasurer), occupied the chair, supported by Messrs. Thomas Stirling, C. Bussell, Robt. Perkins, and other friends of the charity.

Major Brutton (the Secretary), read the annual report, which stated that the committee consider the Institution is prospering, but they do not withhold the fact that it needs increased income, so as to provide for all those who, from unavoidable causes, are of necessity obliged to seek its benefits. Thus for want of sufficient income the committee are unable to recommend for election all who apply and are eligible; this being the more to be regretted as most of them are of an age which pleads for immediate relief. There are doubtless many builders in the Metropolis and its environs who are in easy circumstances, but who have never contributed to the funds of the charity; nevertheless the committee hope such persons may be induced to subscribe, as contributions from them would secure provision for all fit applicants. There are now fifteen men and thirty-three women depending upon the institution. The preponderance in the number of females is in consequence of the widows of pensioners having been made pensioners on the decease of their husbands, in accordance with the rules. During the past year five male and two female pensioners have died; one male and three female pensioners have been elected. The late Mr. Thomas Robinson, formerly a partner in the firm of Messrs. William Cubitt & Co., has bequeathed 1,000*l.* to the institution, which, according to the rules affecting legacies, will be invested in Consols, and added to the other funded property belonging to the charity. The committee also express their thanks to Mr. George Haward Trollope for the successful exertion he made in his Presidential year to obtain a substantial sum for the Institution. The committee had the gratification to intimate that Mr. Basil Pym Ellis, of the firm of Messrs. Lucas & Aird, had consented to be the President for the ensuing year, and that he would preside at the annual dinner to be held on November 15 next, in the hall of the Worshipful Company of Carpenters, London Wall.

Mr. Thomas Stirling moved the adoption of the report and balance-sheet.

Mr. Robert Perkins seconded the motion, which was agreed to unanimously.

The thanks of the meeting were given to Mr. G. H. Trollope for his support and services during the past year, and votes of thanks were also passed to the Vice-Presidents and Trustees, and to Mr. Plucknett for his valuable services, he being again re-elected Treasurer.

A vote of thanks was passed to the committee, and the retiring members were re-elected, with the addition of Mr. Trollope. Thanks were also voted to the auditors, who were re-appointed.

On the motion of Mr. Stirling, Mr. Basil Pym Ellis was appointed President for the ensuing year, and a vote of thanks to the Chairman closed the proceedings.

ESSEX ARCHÆOLOGICAL SOCIETY.—The annual excursion of the Essex Archæological Society took place on the 26th ult. The parishes visited were:—Broomfield, Great Waltham, Pleshey, High Easter, Mashbury, and Chignal Smealey. Mr. Chancellor described, architecturally and historically, the several churches and other buildings brought under the notice of the visitors. Mr. G. F. Beaumont read a paper, prepared by Mr. J. Horace Round, on Pleshey Mount. The Rector of Chignall Smealey (Rev. W. Gibbens) read a paper on his parish church. Thirteen new members were elected at the general meeting, and Colonel Branfill was chosen to sit on the Council. A resolution was carried by acclamation protesting against the ten Essex parishes now forming part of the Bishop Stortford Poor-Law Union being handed over to Hertfordshire.

Illustrations.

VIEW OF RIEVAULX ABBEY.

THIS is the view of Rievaulx which should have been published in our issue for July 7, along with the description and measured drawings of the Abbey given under that date; and which, as explained at the time, was delayed by an accident in lithographing.

The drawing, by Mr. J. A. Slater, shows the view of the ruins looking eastward from the crossing.

GLASTONBURY ABBEY.*

GLASTONBURY will always have a special interest as being the reputed site of the introduction of Christianity into Britain. Into the early history of the spot, however, there is not space here to enter; it has already been given in full in other works (Warner's "History of Glastonbury," and Professor Willis's Architectural History of the Abbey), and to these the reader is referred. The chief points in this history may be put as follows:—The landing of the twelve disciples of St. Philip, with Joseph of Arimathea at their head; the foundation by them of the Wicker Church; its dedication to the Virgin, and its discovery by a miracle in 166 by two missionaries sent by Pope Eleutherius. King Ina founded a monastery in the seventh century, which was ruined by the Danes. It was afterwards rebuilt by Dunstan, who "repaired all that the wars had ruined, by the liberal help of the Kings Edmund and Edgar,"† and was appointed the head of the Benedictine foundation in 940. The church was again rebuilt or enlarged by the Norman Abbots, of whom the first was Turstinus, 1082, and this church was consumed by fire in 1184, on May 25, St. Urban's Day.

This short epitome of the Abbey's history brings it down to the period from which the present ruins date. It must be borne in mind that there were, from the time of King Ina's foundation, two distinct churches: one known as the *Vetusta Ecclesia*, built on the reputed site of the early Wicker Church of St. Joseph; and the *Major Ecclesia, eastward* of it, which was planned in the usual manner of a Benedictine minster.

The ruins, as they exist at the present time, are those of the great church and the chapel of St. Mary, or the Lady Chapel, detached originally from the great church, but afterwards joined to it by a Galilee porch or vestibule.

This chapel of St. Mary was dedicated on St. Barnabas' Day 1186-7, and is the most complete portion of the abbey which has been left to us. It is a rectangular building 54 ft. long and 24 ft. broad, divided into four bays, with a large angle-turret (the two at the west end containing staircases) at each corner, 6 ft. square, and projecting like the buttresses about 2 ft. beyond the face of the main wall. The design of the chapel is divided horizontally into two, the lower part having an interlaced wall arcading both within and without, and the upper part semicircular-headed windows, one in each bay, and a triplet at the west end. Throughout the chapel, on the arcading, vaulting ribs, and window arches, is a large amount of the "zigzag," or chevron ornament in various forms, of which some are here given (see block.) In addition to this the wall arcade inside was ornamented with fresco, and at the west end traces of canopies, which probably had figures beneath them, are still to be seen, chiefly in red colour. In the second bay from the west, both on the north and south sides, were doorways of four orders, with semi-circular arches richly ornamented with figure sculpture and conventional foliage. That on the north, with a series of subjects, some from the life of the Virgin, in medallions, is by far the most beautiful. It will be found well illustrated in the "Vetusta Monumenta" (published by the Society of Antiquaries). A corbel table of two half rounds still remains *in situ* at the top of the chapel walls. Its original finish, probably a parapet, is conjectural. The chapel was vaulted throughout in stone. On a stone in the third bay on the south side are the words JESVS, MARIA incised in Lombardic letters about four inches high. Below the level

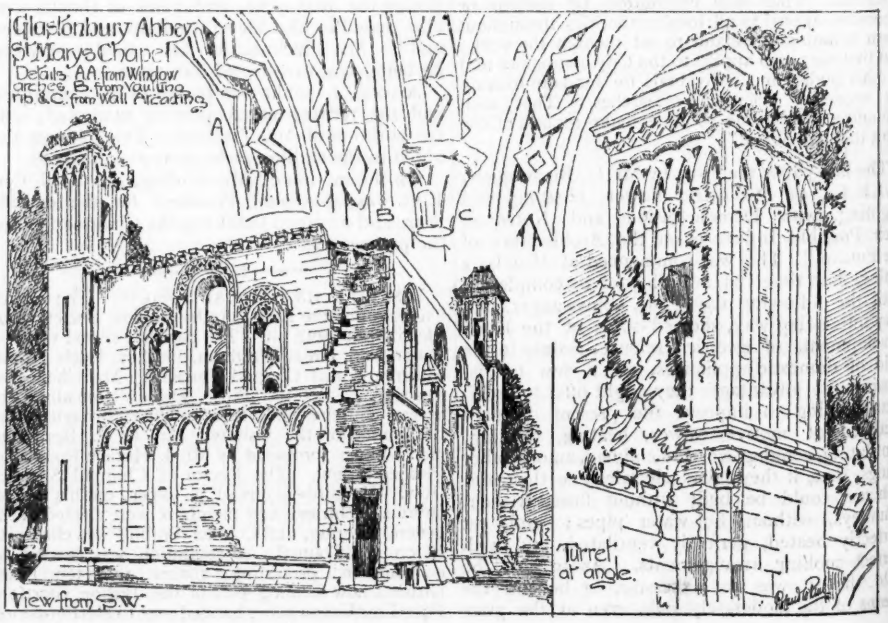
* The series of the "Abbeys of Great Britain" is continued this month with illustrations of (No. III.) "Glastonbury." (No. I.) "Westminster" was given in our New Year's number, January 6, 1894. Particulars of this and of the three Cathedral series ("England and Wales," "Scotland," and "Ireland") will be found on p. 1 of wrapper.

† Willis's "History of Glastonbury Abbey."

of the ground, outside the wall of the chapel, was a well, covered by a semi-circular arch, enriched with chevron ornament. This is reputed to be the Holy Well, and was apparently approached originally from the outside. At a much later period, however (in the fifteenth century), a crypt was formed below the chapel, and sundry other structural alterations were made—a doorway and an approach to the crypt through the north wall of the chapel, with westernmost bay (see plan, and sketch of doorway on plan); the crypt was lighted by windows, mostly of three lights, square-headed, piercing the original plinth, and a second doorway was made on the south side of the chapel, in the easternmost bay, and a steep flight of steps of somewhat peculiar construction which led downwards to the well. The mark of the low roof which covered this building still shows against the outer wall of the chapel, but there are no traces of where the side walls abutted. The well was also approached from a doorway in the side wall of the crypt. This somewhat peculiar arrangement is shown in detail on the large ground plan. The crypt itself was filled with rubbish until cleared out in 1825, when the passage and stair and well were discovered, and the whole thrown open. This chapel of St. Mary was, as has been mentioned above, originally a building standing distinct from the great Benedictine church eastward of it, the foundations of which, 400 ft. long, "were laid by the king's camerarius, Radulphus, son of King Stephen."* This work was undertaken either at the same period, or soon after the completion of the chapel of St. Mary. It is quite possible that as the rebuilding of the monastic offices formed necessarily a part of the scheme of rebuilding, that a portion of the nave—that against which the cloister abutted on the south side—was as early in date as the chapel itself. This would account for the distinctly early character of the three remaining bays of the south nave aisle wall—all that is left of this portion of the church. They are distinctly earlier than the work in the remains of the transepts and eastern arm, and have in each bay windows with semi-circular arches inside but pointed outside. Eastward of this, no round arches, either in the windows or arcades, occur. A stone seat runs along the inner face of the wall, and the vaulting shafts, in clusters of three, are brought down on to it. At the west end of the present remains of this wall is the eastern jamb of the west entrance to the cloister—the so-called "Monks'" doorway, as distinct from the Abbots' doorway further eastward—which is of two orders, and formerly had a semi-circular arch enriched with chevron moulding. A portion of the arch remains in good preservation (see block.) Against the south or outer face of the wall are the corbels, and holes which formerly carried the timbers of the roof of the north cloister walk. Flying buttresses were carried over this from the wall of the aisle, and parts of them remain. It should be noted that the corbel table which remains is of the same pattern as that on the Chapel of St. Mary, which seems to show that the wall was carried up to the top, and possibly roofed in at the same period as that of the Chapel.

From measurements which have been taken expressly for the ground plan given in the present number, the division of the nave seems to have been into *nine* bays and not ten, as in the late Professor Willis's plan. It is a matter of some wonder that so interesting a ruin as Glastonbury does not seem to have been planned in detail before—the largest so far published being that in the "Vetusta Monumenta," which has but llittle detail The width of the nave seems to have been about 76 ft., or slightly wider than the presbytery, but it is a matter of some difficulty to determine exactly. The only other portion of the nave is the central portion of the west wall pierced by the great western doorway, and arcaded on its inner or eastern face. This is of thirteenth-century, or Early English, date, and seems from its style to have been built or rebuilt at the same time as the vestibule or Galilee porch. A point not, we believe, hitherto noticed is that the main axis of the Chapel of St. Mary, and the Galilee is not parallel with the main axis of the great church. The whole of the work westward of the western doorway of the great church bends southward, and the centre line of the great church, if prolonged, would strtke the west wall of St. Mary's Chapel, nearly three feet north of the centre. The great doorway is not also central with the vestibule, and there is consequently more wall space on the south than on the north. This has been utilised as a place for, in all probability, a figure or altar, and the bracket for the former still remains in the wall (see sketch of west doorway).

The Galilee itself was of three bays, and arcaded on its inner face. The centre bay in each side was occupied by a doorway. That on the north remains (see sketch), but with the exception of a small portion of the jamb, the corresponding doorway on the south has disappeared. The easternmost bay, next the great doorway, was almost entirely occupied by a flight of steps which led up to the nave level, four or five feet above the level of the Galilee floor. The traces of these steps are still apparent against the bench of the

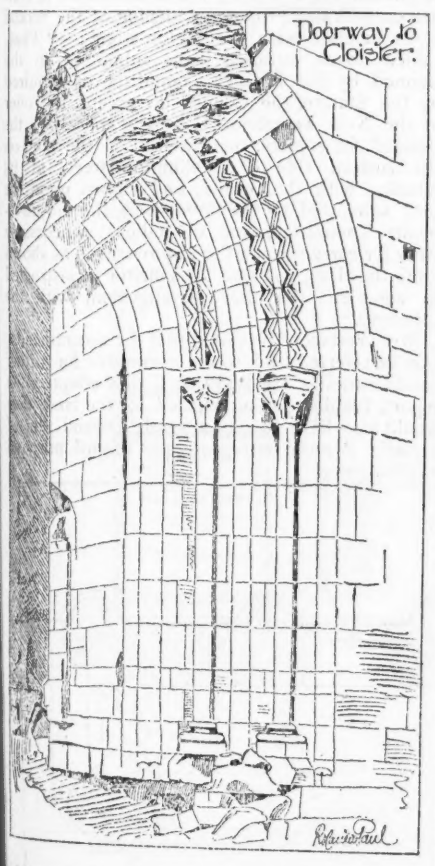


* Willis.

north wall, and have been shown in dotted lines on the ground-plan. In each bay of the vestibule was a window, of probably three lights, under an enclosing arch but the general design above the arcading has been much ruined, although on the north the wall stands to the corbel table level. The corbel table of the vestibule was composed of a series of small trefoiled arches. These are still visible on the south side. At the period of the building of the Galilee, the eastern wall of St. Mary's Chapel seems to have been removed. The altar of course remained, with its reredos and screen wall behind, and possibly a doorway on either side leading to a vestry which might have occupied the westernmost bay of the vestibule.

The great west doorway itself was a fine arch, 11 ft. wide, of four orders of mouldings, resting on carved caps with conventional Early English foliage. The inner arch was a segmental one, and the space between was partly occupied by cusping. There is no trace of figure sculpture, however. This doorway and the easternmost bay of the Galilee, with its arcading, and remains of the steps leading to the church, are clearly shown in the sketch (see block at the head of preceding page.

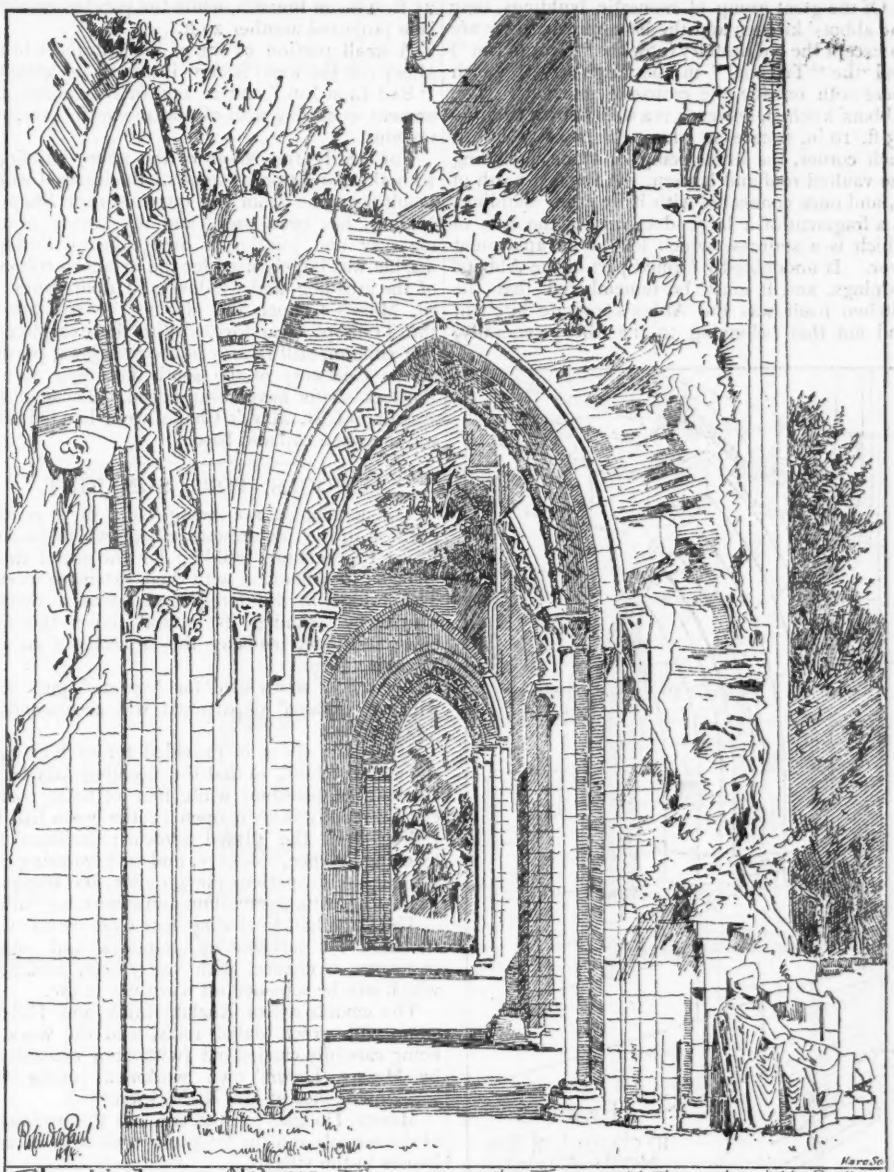
We pass now to the central tower and the eastern arm of the church. Of this part of the fabric the two eastern piers of the central tower remain to a slightly higher level than the springing of the great arches; of the transept on the north one of the two chapels remains complete (except for its vaulting), and the second only in part; of the corresponding south transept only a very small portion of the eastern chapel remains attached to the Prebsytery wall. The Presbytery outer wall on the south remains in fair condition, very nearly to the east end. The north wall remains, however, only for two bays each of the crossing, in anything like a perfect condition, although the wall remains in a ruined state further eastward. Of the east end two fragments remain,



with traces of three of the five altars, which stood at the extreme east end behind the high altar, and a portion of the return north wall with an aumbrey or piscina.

The Choir and Presbytery (in the absence of any traces of the extent of the ritual choir, we take them together) extended for six bays east of the crossing.* At the end of the sixth bay is a large double buttress on the south, with which corresponded a similar one on the north, and these mark the position of the east wall of the Presbytery, in front of which stood the reredos and high altar. Beyond this was an extension of two bays, which were returned round the east end, the first being used

* The roodbeam was across the *Eastern* tower arch, so that the ritual choir was east of this.

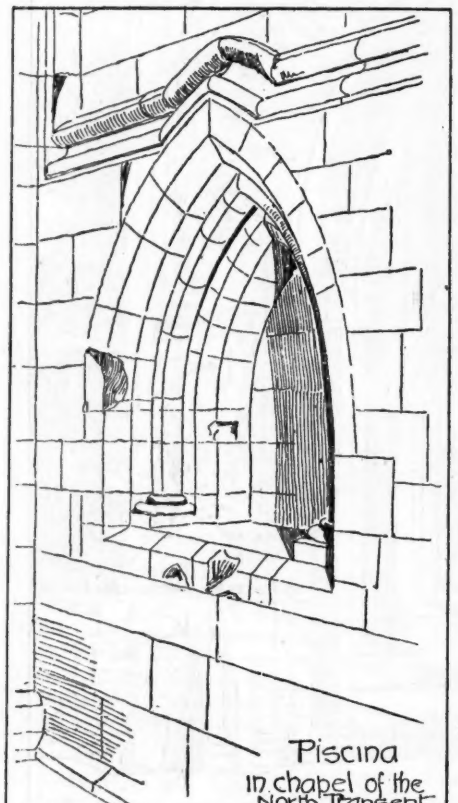


Glastonbury Abbey.—View across the Transept Chapels, looking South.

as an ambulatory, and the second for a row of five altars. This arrangement, although the order of monks was different, may be compared with the present existing presbytery at Abbey Dore (Cistercian), in Herefordshire, a detailed plan of which was given in the *Builder*, April 8, 1893. There the arrangement is complete, although the altars themselves have gone. At Glastonbury, on the contrary, only two of the partition walls remain in ruins, but against the portion of the east walls adjoining are interesting traces of three of the altars which stood here, and one of them (that to the south of the centre) shows also the base of the panelling of its reredos. (See sketch on large ground-plan.) The two fragments of division walls, and the two eastern vaulting-shafts against the south wall are Late Decorated in date, and form probably a portion of the work of completion carried out by Abbot Monington, 1342–1376. The *foundations*, it must be remembered, had been laid in the twelfth century of the whole of the church, and the *plinth* of the eastern end of the presbytery chapels *has the same section as that round the Chapel of St. Mary.* The whole of the work of the Presbytery has evidently been carefully copied from the slightly earlier work of the nave, with a slight alteration in detail, as for instance in the use of the pointed arch throughout, instead of the semi-circular. Coming westward to the Transepts and Central Tower we find an interesting and curious arrangement in the former. They had apparently no western aisle, but there was not only an eastern aisle but the Transept chapels were thrown out east again, which gives the Transept a double aisle on this side. Doubtless this aisle was useful either for processions, or if closed was probably largely utilised for tombs of abbots and benefactors, but its planning is believed to be unique. Of the piscinæ in these chapels one remains perfect and is here given (see block). From the fragments of the wall attached to the eastern tower piers we are enabled to determine the design of the Transepts. The triforium was a lofty one, and had an arcade of three trefoiled-headed arches under a pointed inclosing arch, enriched with chevron ornament. The clearstory appeared inside as a triplet, but the two side openings were filled in at the back, so that a single lancet only appeared on the exterior. We do not know, of course, what the design of the ends of the transept was, but judging from the size of the windows remaining, the effect of the interior must have been solemn in the extreme. A very small portion of panelled wall projects from the east side of the tower piers at some height from the ground, and appears to be the remains of an alteration in the design of the upper portion of the Choir in Late Decorated or Early Perpendicular times. Abbot Monington, who completed the chapels east of the Presbytery "made," according to Leland, "the vault of the choir and presbytery," and it may possibly be of his date, but we should be more inclined to attribute it to Abbot Beere (elected 1493), who inserted a "St. Andrew's Cross" under the tower arches (like those at Wells Cathedral) to save the central tower, and very probably the later panelling we see now is part of the general strengthening of the wall adjacent to the tower piers which would be rendered necessary. The mark of the "St. Andrew's Cross" is still very clear on the west side of the piers, and shows on the large view.

Of the numberless monuments and shrines which this abbey contained, and which included the tombs of King Arthur and his Queen, King Edmund, and Edmund Ironside, hardly a vestige remains. A fragment of a thirteenth-century effigy lies, with other fragments, in the north transept; and an early effigy of an abbot with crosier and mitre stands against the east wall of the abbot's kitchen. There is also a late tomb in St. John's Church, hard by, said to have been brought from the Abbey church, and to represent one "Camel" or Campbell, a purse-bearer. The panels on the sides of the tomb are alternately occupied by Camels, and angels holding shields charged with the Abbey arms. On the top is a fine effigy with a somewhat elaborate purse hanging from a girdle at the side.

Of the great group of monastic buildings, only the abbots' kitchen and the barn remain if we are to except the old hostelry (now the "George Inn") and the "Tribunal" in the High-street, which were both outside the monastic precincts. The Abbots' kitchen, however, is a well-known building 33 ft. 10 in. square on plan, with a fire-place in each corner, the whole being of stone, including the vaulted roof and lantern. A few feet north of it, and once connected with it by other buildings is a fragment of a large doorway, by the side of which is a staircase which led to an apartment over. It undoubtedly formed part of the Abbots' lodgings, and it must be remembered that the kitchen itself was the Abbot's private kitchen, and not that belonging to the Abbey generally,



which will give some idea of the scale on which the establishment was planned. The kitchen, and the building north are of fourteenth-century date. The only other remains are the fine tithe-barn, standing some little distance south, cruciform, with the emblems of the Evangelists in panels in the gables, and measuring, according to Pugin's plan, 85 ft. 8 in. in length inside, and 25 ft. 9 in. in breadth, while the porches on either side projected another 20 ft.*

A small portion of one of the entrances to the abbey (on the west) is now incorporated with the "Red Lion Inn," and at one or two points the ancient enclosing wall of the monastic precincts remains.

For nearly the whole of the abbey buildings, with the exception of some of the internal work, Doulting stone (from the quarries near Shepton Mallet), has been used, and the beauty of the masonry and jointing is exceptional. Purbeck marble was largely used for the detached columns of the arcading and window and door-jambs in St. Mary's Chapel, and also in the columns of the Transept clearstory. With the exception of one column, still *in situ* in the remaining portion of the clearstory of the south Transept, all the Purbeck shafts have disappeared. Those of the arcading of St. Mary's Chapel were banded midway between cap and base.

SCHOOLS, PORT SUNLIGHT.

These schools are being built in a central position in the picturesque village which Messrs. Lever Brothers are building for the use of those engaged in connexion with their extensive works. The bridge in the foreground spans a ravine, which, by retaining its natural slopes and fine trees, assists in realising the *ensemble* of an old English village.

The school is intended for boys and girls, and with the infants' department will accommodate 500 children.

A separate room is provided for each class in the mixed school, so that the teaching may be as efficient as possible, while four of these rooms can be readily thrown open to the main hall by sliding back the glazed screens; facilities for teaching science, cookery, and woodworking are provided, also spacious playgrounds, and it is proposed to erect a gymnasium and swimming-bath.

The large hall (including four class-rooms) will be used for services on Sundays and other occasions, a chancel with vestry being attached, which will be screened off when not in use.

The schools are of Ruabon brick and Helsby stone with green slated roofs, and the work is being carefully carried out (without a contractor) by Messrs. Levers' own workmen, under the superintendence of Mr. R. Nickson.

Messrs. Douglas & Fordham are the architects of the schools and the bridge, as well as of various houses in the village.

The drawing is exhibited at the Royal Academy.

The Park Roadways.—The roads in the parks under the jurisdiction of the Office of Works are to be treated this year with Rutty's patent "scarifier," which will be at work continuously for the next six or seven weeks, over about 130,000 superficial yards of roads, commencing with Hyde Park.

* See Pugin's "Examples of Gothic Architecture," vol. ii.

THE LONDON COUNTY COUNCIL.

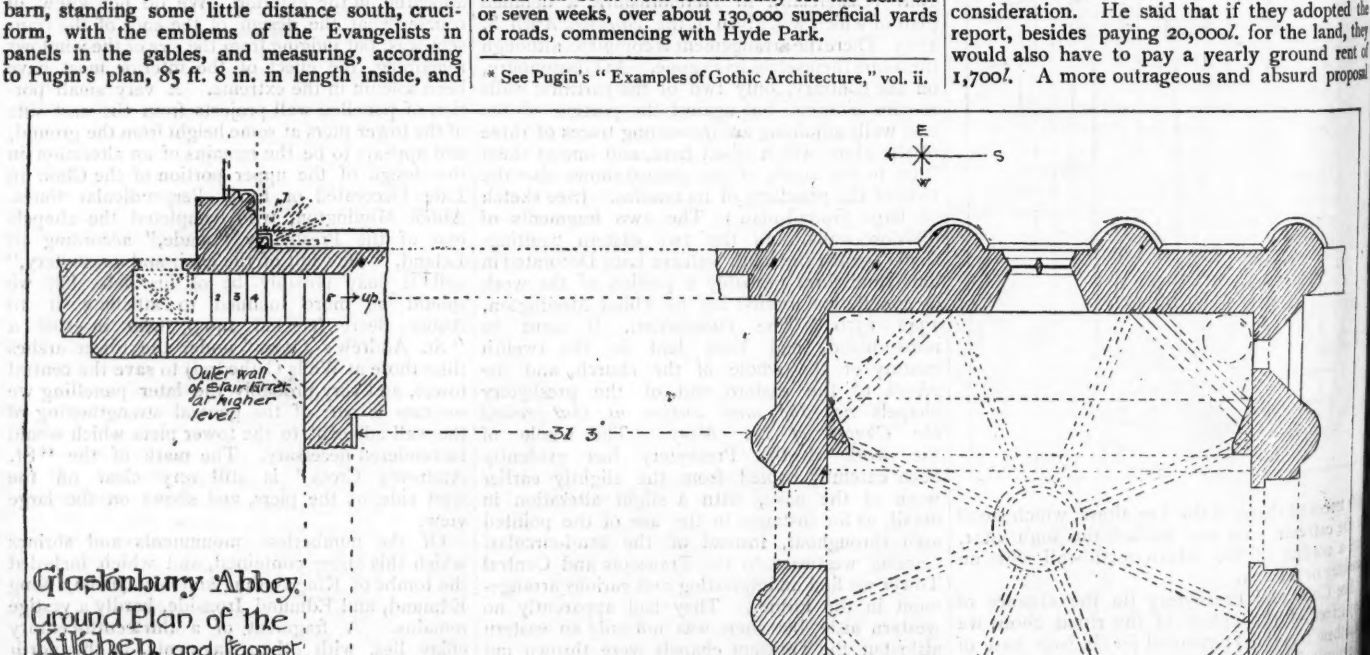
The usual weekly meeting of the London County Council, the last before the summer recess, was held on Tuesday, in the County Hall, Spring Gardens, Sir John Hutton, Chairman, presiding.

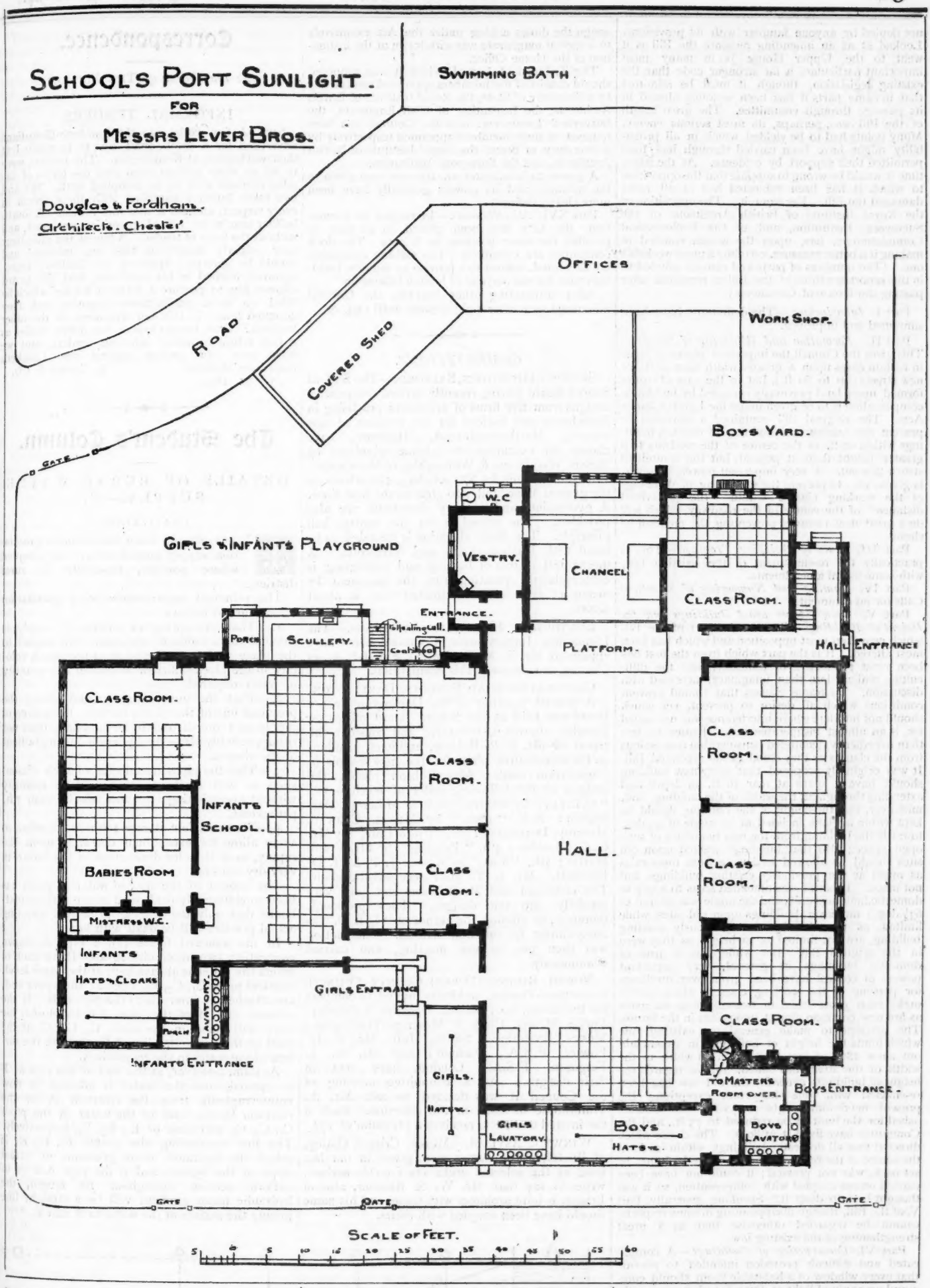
Working Class Dwellings.—The Public Health and Housing Committee reporting on the erection of buildings on the Goldsmith-square site, Shoreditch, for the accommodation of persons displaced by the Boundary-street scheme, said they were of opinion that the erection of the buildings should be put in hand at once, and not delayed beyond the recess. They had carefully examined the plans, with the view of ascertaining whether their cost could be reduced, but they were satisfied that no further economy was desirable. Moreover, they were informed by the architect that unless the work was at once proceeded with the cost would be increased, as it would have to be done in the winter months. The estimated cost of the dwellings was 5,953*l.*, and accommodation would be provided for 144 persons. They submitted the plans, specification, and estimate, and recommended:—"That, subject to an estimate being submitted to the Council by the Finance Committee as required by the statute, the dwellings to be provided on the Goldsmith-square site be erected by the Council without the intervention of a contractor, and that the plans, estimate, and specification be referred to the Works Committee for that purpose." This was agreed to.

The Shaftesbury Memorial Fountain.—On the reception of the report of the Improvements Committee, Mr. Arter, the chairman, in reply to Mr. Moss, said that the total cost to the ratepayers of the works in connexion with the Shaftesbury Memorial Fountain was 1,558*l.* The estimated annual cost of working the fountain was 234*l.*

The Strand Widening.—The same Committee submitted the following recommendation in connexion with the proposed widening of the Strand at its junction with Wellington-street:—"That, subject to an estimate being submitted to the Council by the Finance Committee as required by the Statute, the Council do accept the offer of the New Telephone Company to sell to the Council for 20,000*l.* their interest in the land on the eastern side of Wellington-street, at its junction with the Strand, and shown upon the plan submitted to the Council by the Improvements Committee, and do take the necessary steps for carrying out the improvement as shown upon the plan; and that the solicitor be instructed to complete the above arrangement with the company."

Mr. Westacott proposed that the recommendation be referred back to the committee for further consideration. He said that if they adopted the report, besides paying 20,000*l.* for the land, they would also have to pay a yearly ground rent of 1,700*l.* A more outrageous and absurd proposal





had never been submitted to the Council, and he hoped they would never hear any more of the matter.

Mr. Hubbard seconded the amendment, which was agreed to.

Electric Lighting of the Embankment.—The Highways Committee presented a report on the proposed electric-light installation for the Victoria-embankment and Waterloo and Westminster Bridges, which would involve a capital expenditure of 20,000*l.*, but on the motion of Mr. Westacott, the consideration of the matter was adjourned until next spring.

The London Streets and Buildings Bill.—The Parliamentary Committee reported as follows in reference to the London Streets and Buildings Bill :—

"After consideration by a Hybrid Committee for twenty-two days, this Bill has passed the House of Commons. It must be borne in mind that the Bill is both a consolidating and an amending measure, and accordingly its progress through Parliament may advantageously be considered from both points of view. A consolidating Bill is exposed to the especial danger, when accompanied by amendment, that in seeking new powers existing powers may be lost. So far this danger has been avoided. A right of appeal not previously existent has been in many places allowed, but with this exception, no existing power of the Council has been taken away, since minor restrictions, which have been intentionally removed as useless, or even harmful, cannot be looked upon in the light of losses. If this be so, the Council may be well congratulated on having so far accomplished the consolidation of the law regulating buildings and streets in London. A consolidation which involves the complete repeal of 8, and the partial repeal of 7 Acts of Parliament is a work of no small importance. That the Bill in its present shape, with its 214 clauses and 4 schedules, is a vast improvement upon the present incongruous mass of statutes is, we venture to say,

not denied by anyone familiar with its provisions. Looked at as an amending measure the Bill as it went to the Upper House is in many most important particulars a far stronger code than the existing legislation, though it must be admitted that in some parts it has been seriously altered in its passage through committee. The great length of the Bill was, perhaps, its most serious enemy. Many points had to be yielded which in all probability might have been carried through had time permitted their support by evidence. At the same time it would be wrong to suppose that the opposition to which it has been subjected has in all cases damaged the Bill. Far from it. The opposition of the Royal Institute of British Architects, of the Surveyors' Institution, and of the Ecclesiastical Commissioners, has, upon the whole, resulted in making it a better measure, certainly a more workable one. [The numbers of parts and clauses alluded to in this report are those of the Bill as reprinted after passing the House of Commons.]

Part I. *Introductory.*—The definitions have been simplified and improved.

Part II. *Formation and Widening of Streets.*—This gives the Council the important power to insist in certain cases upon a greater width than 40 ft. for new streets (up to 60 ft.), but in the case of streets formed upon land previously occupied by buildings, compensation is to be given under the Lands Clauses Acts. The original Bill contained a provision to prevent the raising or rebuilding of existing buildings within 20 ft. of the centre of the roadway to a greater height than at present, but the committee struck this out. A very important power, however, is given, viz., to prevent the rebuilding of dwellings of the working classes within "the prescribed distance" of the centre of the roadway, which will do a great deal towards preventing the creation of slums.

Part III. *Lines of Building Frontage.*—This is practically the re-enactment of the existing law, with some useful amendments.

Part IV. *Naming and Numbering of Streets.*—Calls for no comment.

Part V. *Open Spaces about Buildings and the Height of Buildings.*—This is the part of the Bill which provoked most opposition and which has been most altered. It is the part which from the first has been most productive of difficulty, and the difficulties, real no less than imaginary, increased with discussion. To frame clauses that should prevent conditions which all desire to prevent, yet which should not interfere where interference was not called for, is an almost insuperable task. Justice no less than expediency demanded considerable concessions from the clauses as they stood in the deposited Bill. It was originally proposed that *every* new building should have a space at rear 10 ft. in depth and extending throughout the width of the building, and, moreover, that the height of the building should be kept within a plane inclined at an angle of 45 deg. towards the building from the rear boundary of such open space; also that buildings erected upon old sites should be allowed to deviate from these rules as much as the previously existing buildings, but not more. This rule was amended so as to apply to domestic buildings only, and the angle was altered to 63½ deg.; moreover, buildings upon old sites, while limited as to area by the previously existing building, are not limited as to height as they were in the original Bill. But while this is true of domestic buildings in general, very important powers of control have been given over dwellings for persons of the working classes, which would make such gross cases of overcrowding on space as are now common almost impossible in the future. The attempt to make general the existing rule which limits the height of buildings in streets laid out since 1862 of less than 50 ft. in width to the width of the street has failed, and as regards the height of buildings generally the old law has been re-enacted with one important exception; the present maximum height is 90 ft., the Council asked for the limit to be reduced to 75 ft., and the Committee have fixed it at 80 ft. The clause which directed that all domestic buildings within 20 ft. of the centre of the roadway should, on re-building, be set back, was not pressed; it could not have been carried unless coupled with compensation, so it was thought best to drop it. Speaking generally, Part V. of the Bill, though disappointing in some respects, cannot be regarded otherwise than as a great strengthening of the existing law.

Part VI. *Construction of Buildings.*—A complicated and difficult provision intended to provide that every window of a habitable room should command an angle of light of forty-five deg. was withdrawn at an early stage; also the attempt to regulate buildings under railway arches had to be abandoned. The whole part is very technical in character; several irksome and unnecessary restrictions have been removed, while several important new powers have been given.

Parts VII.-XIII. are so nearly re-enactments as to call for no special comment. A method of arbitration has been inserted in reference to dangerous structures, but so as not to prevent the Council from taking immediate action where necessary.

Part XIV. *By-laws.*—The number of matters with respect to which the Council may frame by-laws is greatly increased.

Part XV. *Legal Proceedings.*—The proposal to assign the duties arising under the Act exclusively to a special magistrate was withdrawn at the instigation of the Home Office.

The Tribunal of Appeal, which it was proposed should consist of five members appointed respectively by a Secretary of State, the Royal Institute of British Architects, the Institution of Civil Engineers, the Surveyors' Institution, and the Council has been reduced to three members appointed respectively by a Secretary of State, the Royal Institute of British Architects, and the Surveyors' Institution.

A power to administer an oath has been given to the tribunal, and its powers generally have been more clearly defined.

Part XVI. *Miscellaneous.*—In respect to exemption, the City has been placed in as near as possible the same position as it was. The dock companies are exempted. The railway companies are exempted, subject to a proviso as regards buildings used for the purpose of human habitation."

After transacting other business the Council adjourned soon after eight o'clock until Oct. 2.

COMPETITIONS.

Schools, Hightown, Salford.—The Salford School Board having recently invited competitive designs from five firms of architects practising in Manchester and Salford for the erection of new schools, Marlborough-road, Hightown, have chosen for execution the scheme submitted by Messrs. Woodhouse & Willoughby, of Manchester. Provision is made for 870 scholars, 450 infants on the ground floor, and 420 girls on the first floor. A gymnasium and cookery class-room are also provided. The school is on the central hall principle. The front elevation is intended to be faced with Ruabon stocks and terra-cotta. A mechanical system of heating and ventilating is contemplated, operating from the basement by means of fans. The estimated cost is about 9,000*l.*

Llandudno Municipal Buildings.—The Llandudno Improvement Commissioners have appointed Mr. T. M. Lockwood, F.R.I.B.A., of Chester, as assessor in this competition.

Corporation-road Schools, Darlington.—A special meeting of the Darlington School Board was held at the School Board offices on Tuesday afternoon, to receive and consider the report of Mr. E. R. Robson, architect, London, on the competitive plans for the new schools in Corporation-road. Mr. Robson placed the designs in the following order of merit:—1st, "Q.E.D.," by Messrs. Clark & Moscrop, Darlington; 2nd, "1894," by Messrs. Clark & Moscrop, Darlington; 3rd, "Up-to-Date," by Mr. G. G. Hoskins; 4th, "Progress," by Mr. Frank Martin; 5th, "Lux," by Messrs. J. P. & H. D. Pritchett. Mr. J. T. Hall occupied the chair. The chairman said Mr. Robson had gone very carefully into the designs. They proposed, therefore, to employ the author of "Q.E.D." as the architect for the new schools. The motion was then put to the meeting, and carried unanimously.

North Riding (Yorks) County Council Offices.—The five architects invited to compete for the above, viz., Messrs. Demaine & Brierley, York; Messrs. Clark & Moscrop, Darlington; Messrs. Broderick & Smith, Hull; Mr. C. H. Fowler, F.S.A., Durham; and Mr. C. J. Ferguson, F.S.A., London, have sent in their designs. At a committee meeting of the Council it was decided to ask Mr. A. Waterhouse to assist in the selection. Each of the invited architects receives a premium of 25*l.*

Winwick Asylum.—Messrs. Crisp & Oatley, of Bristol, whose names were given in our last issue as the selected architects for this asylum, write to say that Mr. W. S. Skinner, also of Bristol, is joint architect with them, and his name should have been coupled with theirs.

Correspondence.

To the Editor of The Builder.

INFORMAL TENDERS.

Sir,—A few weeks ago the Lambeth Guardians advertised for a smoke-shaft, &c., to be erected at their workhouse at Kennington. The tenders were to be on their printed form and the terms of the advertisement were to be complied with. We and two other builders complied with these terms in every respect, and our tender was lowest. A fourth builder sent in his bill of quantities, unsigned, and without the form of tender. A few of the guardians very properly considered this was informal and should be ignored. However, the builders' representative fetched in his employer, and the board allowed him to procure a form of tender which he filled up at a public-house opposite, and they accepted him. Is this fair treatment to the other builders? True, he was lowest, but public bodies as a rule refuse to accept informal tenders, and we must raise our protest against the Lambeth Guardians' decision. J. Yates & Co.

July 31, 1894.

The Student's Column.

DETAILS OF RURAL WATER SUPPLY.—V.

GRAVITATION.

IT has already been stated that a gravitation supply should always be adopted where possible, especially for rural districts.

The principal requirements of a gravitation scheme are as follows:—

1.—That the spring or source of supply is situated at a sufficient elevation with regard to the place to be supplied so as to produce a velocity in the pipes sufficient to deliver the quantity of water required.

2.—That the intervening ground along the proposed line of the pipes, between the source of supply and the district to be supplied, does not rise appreciably above the hydraulic mean gradient of the system.

3.—That the pipes are selected of such dimensions as will discharge the requisite quantity without necessitating a greater velocity than 3 ft. per second.

4.—That sufficient storage room is afforded, so as to allow for exceptional demands upon the supply, as well as for diminution in the latter in very dry seasons.

The subject of the flow of water in pipes has been so elaborately dealt with in the various text-books that only the leading principles affecting actual practice will be dealt with here.

In the annexed figure (1), a pipe is shown connecting two reservoirs A and B, in each of which the water is always kept at the same level. Vertical pipes C_1, C_2, C_3, open at the upper end, are attached at intervals to the pipe A B. If the extreme end B of the pipe A B be closed, the water will stand in the pipes C_1, C_2, C_3 at the level of the horizontal line A D, through the surface of the water in the reservoir A.

As soon, however, as the end of the pipe at B is opened, and the water is allowed to flow uninterruptedly from the reservoir A to the reservoir B, the level of the water in the pipes C_1, C_2, C_3 will sink to E_1, E_2, E_3, respectively. The line connecting the points E_1, E_2, E_3 is called the hydraulic mean gradient, or virtual slope of the system, and if the pipe A B be of uniform section throughout its length, the hydraulic mean gradient will be a straight line joining the surface of the water in A and B.

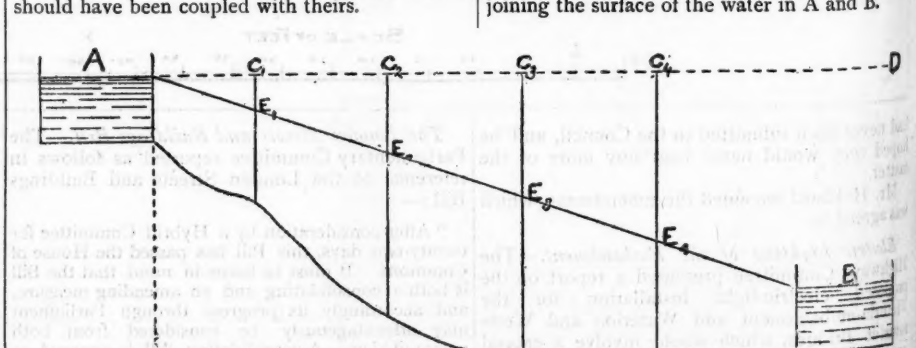


Fig 1

This gradient is represented by the height of the reservoir A above the reservoir B divided by the length of the pipe, which is the sine of the angle made by the line of the gradient with the horizontal. It has been found that the velocity acquired by water flowing through a pipe varies directly as the square root of the quantity representing the hydraulic mean gradient and directly as the square root of the diameter of the pipe.

The section of the pipes C_1 C_2 C_3, situated between the line of pipe A B and the hydraulic mean gradient denotes the pressure (in addition

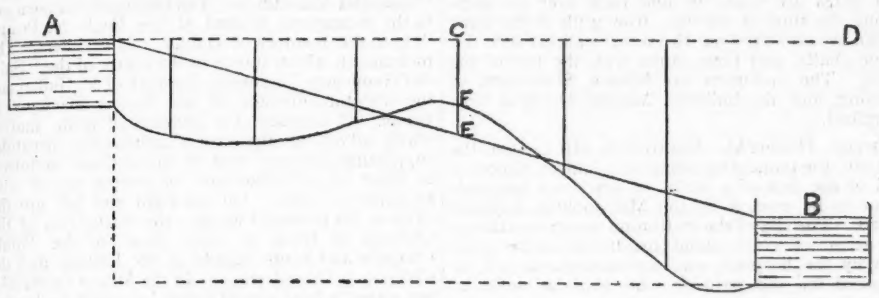


Fig 2

the atmospheric pressure) in the pipe at those points, and it is evident that when the line of pipe and the hydraulic mean gradient coincide, the pipe may be replaced by an open channel.

Suppose, however, that the line of pipe rises above the hydraulic mean gradient, it is clear that the pressure at that point is less than the atmospheric pressure by an amount indicated by the distance of the pipe above the hydraulic mean gradient. When this distance exceeds the height of a column of water which can be supported by the atmospheric pressure (34 ft.) the pressure becomes nil and flow ceases. Practically, the distance should never exceed 25 ft. When the pressure at any point F (fig. 2) is less than the atmospheric pressure, the flow continues by syphonage until sufficient air is extracted from the water, which fills the summit of the pipe, and syphonage ceases. The pipe at this point may then be replaced by an open channel. The pipe is practically divided into two sections, A F, F B and the discharge at B must depend upon the quantity which the first section A F is capable of delivering at the point F.

As the velocity, and, therefore, the discharge, depend upon the diameter of the pipe and upon the hydraulic mean gradient, a deficiency in the latter may be made up by an increase in the former. In the case just cited, the diameter of the pipe between A and F should be increased, so that, with the gradient A F, the same volume of water may be delivered at the point F as the portion of the pipe between F and B is capable of discharging with the gradient F B.

When the end of the pipe B (Fig. 1) was closed, the level of the water in the pipes C_1 C_2 C_3 rose to the same horizontal level as the water in the reservoir A. The hydraulic mean gradient will, therefore, rise or fall between the lines A D A B, according as the orifice at B is closed or open.

In practice the orifice at B is never constantly open to its full extent, or, in other words, the maximum quantity that the main is capable of discharging is not constantly being discharged. Advantage is taken of this fact in the use of air-valves, which are fixed at the summit of all sections of the main which rise above the hydraulic mean gradient (calculated upon a maximum discharge). Whenever the consumption is less than the maximum, the hydraulic mean gradient rises, forcing the air out of the summits of the system and allowing syphonage to recommence, when the hydraulic mean gradient falls back to its lower position.

The formulæ generally used for calculation of velocity and discharge of water in pipes are:—

1.—$v = 39 \sqrt{d\,i}$

Where v = velocity in feet per second.
Where d = diameter of pipe in feet.
Where i = height of point of supply above point of discharge (h) divided by the length of the pipe (l) ($= \frac{h}{l}$), each of which must be referred to the same unit—say feet.

2.—$g = \sqrt{\frac{3d)^5 \times h}{l}}$

Where g = discharge in gals. per minute.
Where d = diameter of pipe in inches.
Where h = head in feet.
Where l = length of pipe in yards.

These formulæ allow a sufficient margin for subsequent rusting in the pipes.

By substituting the value 3 for v in the first equation, the following result is obtained—

$$d = \cdot 006 \times \frac{l}{h},$$

which enables the diameter of a pipe to be calculated where the head and length are known, so that the velocity may be 3 ft. per second.

A gravitation supply usually requires a larger storage capacity than a pumping supply, as the sources are generally small at such elevations as will allow of gravitation. The amount of storage is regulated by the volume and permanency of the source. This matter, together with the subject of collection, will be dealt with in a subsequent paper.

When the source of supply is situated below the level of the immediately surrounding ground, and considerable expense would be entailed by excavation to a sufficient depth to allow a fall in the direction of the supply, recourse may be had to a syphon. The summit of the syphon must theoretically not exceed 34 ft. above the level of the surface of the water from which the supply is to be drawn; practically about 25 ft. is the limit.

The syphon may be charged by an air-pump attached to the longer leg, the communication with the main being cut off by means of a sluice-valve; or the extremities of both legs may be closed by means of sluice-valves and the apparatus filled with water through a cock at its summit; the cock is then closed and the sluice-valves opened, when flow immediately commences. When the water is highly aërated the syphon has to be frequently recharged. In calculating discharge the head must be measured to the surface of the water in the reservoir, and not to the summit of the syphon.

GENERAL BUILDING NEWS.

ST. PETER'S CHURCH, STAINES.—On June 24 of last year we published an illustration of this church, which was consecrated by the Bishop of Marlborough on Saturday last. The church, as our readers may remember, is the gift of Sir Edward Clarke, the former Solicitor-General; and the architect is Mr. H. Fellowes Prynne. In 1892, the tender of Messrs. Goddard & Sons, of Farnham, for 6,000*l.*, was accepted, this sum being exclusive of the tower and spire, which have since been given by Sir Edward Clarke, at an additional cost of about 1,400*l.* The screen has also since been given at a cost of nearly 300*l.* The style chosen is a free treatment of Perpendicular Gothic in red brick and stone. The nave is of four bays 26 ft. wide by 80 ft. in length, having a height of 40 ft. to the apex of the waggon roof. The chancel is of the same width and height as the nave. There are north and south aisles to the nave, and a narthex at the west end with western entrance. The tower, which is placed at the south-west end of the south aisle, is designed in three stages and finished with a copper-covered spire. In the lower stage on the nave floor level a baptistry is formed. A southern transept with separate entrance forms the nave of a small chapel on the South side of the chancel. On the north side of the chancel are clergy and choir vestries with the organ chamber. The altar is elevated by nine steps from the nave floor level, and ample space and height are left above and behind the altar for a baldachin or reredos. One of the main features of the Church is the constructional rood screen, which is carried right up into the chancel arch, the upper portion of which is enriched with tracery. The central figure and rood are designed to be cut out of the solid stonework of the tracery, and the side figures placed on corbels formed in the panels of the tracery. This feature is quite unique, no other example of similar treatment existing. All the sculptured work has been done by Mr. J. Taylerson, of Lavender Hill. Mr. W. H. Augur, of Staines, has acted as clerk of works. The choir stalls have been presented by Sir Edward Clarke, and the altar, which is of very elaborate design, and which is to be highly decorated in gold and colours from the architect's design, is the gift of Lady Clarke. Both the stalls and altar have been carried out from the architect's designs by Messrs. Lonnie & Co., of Camberwell. The iron screen work and chancel gates and door furniture have been made by Messrs. Singer & Sons, of Frome. The rich dossal and hangings were supplied by Alfred Stalman of Frith-street, Soho. Messrs. John Warner & Sons, of London, supplied the bells. Mr. Puckle, the churchwarden, presented a window in the south aisle, and a pair of old Norwegian candlesticks were given by a legal friend.

PROPOSED CHURCH, HOWTH, DUBLIN.—It is proposed to erect a new church at Howth, Dublin, Mr. W. H. Byrne is the architect appointed. The new Church of the Assumption will be in Romanesque style, comprising nave, with circular apse, transepts, side chapels, and two sanctuaries. The total length will be 125 ft., the width of nave 32 ft. The transepts are each 30 ft. by 20 ft. At the west end, which is the principal entrance, there will be moulded doors, with circular windows over the centre. The tower is also at the west end, with spire about 150 ft. high. There are moulded stone arches supported on polished granite columns between nave, transepts, and side chapels. The roof of the apse is to be groined and supported on polished granite shafts. The roofs of nave and transepts will be in timber, divided into panels. The materials used in the building will be the local limestone.

NEW MISSION HALL, KENSINGTON.—On the 25th ult. the foundation-stone of St. Mary Abbot's new Mission Hall and Infants' School for the Hon. the Rev. E. Carr Glyn was laid by Mrs. Temple. The new building will include an infant school and class-room on the ground floor, built according to the requirements of the Education Department, the plans having been approved. On the first floor will be the mission hall, to accommodate 200 persons, with cookery class-room adjoining, approached by stone stairs. A caretakers' residence is provided on the second floor. The building will be faced with red brick and Monks Park stone. The floors are to be of Dawnay's fireproof construction. The total cost will be 2,500*l.* The builder is Mr. Walter Nash, of Kensington-road, and the architect, Mr. T. Phillips Figgis.

RESTORATION OF PRESBYTERIAN CHURCH, CARLISLE.—The memorial stone of what will practically be the new Fisher-street Presbyterian Church, Carlisle, was recently laid by Mrs. Christie. All that remains of the old church are the side walls. According to the plans, which have been prepared by Mr. T. Taylor Scott, the architect, the front of the church will be brought forward to within a short distance of the street line in Fisher-street, thus adding to the length of the old building; the roof will be entirely reconstructed, and at the east end there is to be a chancel for the organ. The external front of the church will be new. In style it is to be Transitional Gothic. The scheme also includes the removal of the present winding stairs leading to the galleries, and these will be replaced by two staircases to be approached from the outside, each by a moulded Gothic doorway. At the same time there will be communication between the large central vestibule and the gallery stairs, which are to be of fireproof material, and the gallery itself will be entirely new. The church will also be newly seated, accommodation being provided for 760 worshippers. Under the chancel recess provision is made for a new heating apparatus. The new ceiling will be divided longitudinally into three sections, the nave roof being semi-polygonal in outline and divided into bays by ornamental principals, whilst the roofs over the two side aisles will also be open-boarded and divided into panels. Messrs. W. & H. Davidson are the contractors.

SCHOOLS, STOCKPORT.—The new schools which have been erected in connexion with St. Peter's Church, Stockport, were opened on the 21st ult. by the Bishop of Chester. The plans of the building were prepared by Messrs. Woodhouse & Willoughby, of Stockport, and the contract was placed in the hands of Messrs. T. & W. Meadows. The window-sills and copings of the buildings are of Ruabon terra-cotta brick, while in a terra-cotta niche, just over the main entrance, will stand, covered by a canopy, a statue of St. Peter, modelled in Ruabon clay by Mr. George Holden, of Manchester. One side of the large schoolroom may be divided into three class-rooms by means of folding shutters, the patent of Messrs. Peace & Norquoy, of Manchester. Mr. Kelsall has acted as clerk of the works. The school is a mixed one, but there will be separate entrances for girls and boys, and two separate playgrounds paved with asphalte. The boys' entrance will face the post-office, the girls will enter by way of Hooper street. In the basement of the building is a kitchen. There are other rooms, managers' committee-room, store-room, &c. The heating apparatus, on the hot-water system, was supplied by Mr. Isaac Beeley, of Hazel Grove.

EXTENSION OF BIDDULPH CHURCH, STAFFORDSHIRE.—Biddulph Church, after having been closed for some months for extension and repair, has been re-opened. The works just completed consist of a new organ-chamber at the east end of the north aisle, with a priest's doorway on the north side of it; the re-seating of the whole of the church with benches of oak, mostly from Bagot's Park; new

flooring throughout the church, with oak-blocks beneath the seats, and Campbell's tiles in the passages; and a new heating apparatus. The old pewing has been appropriated to wainscotting the walls of the organ-chamber and of the church. Messrs. Ward & Son, of Uttoxeter, were the general contractors for the above works, and Mr. Lynam was the architect.

Additions to Church, Lincoln.—The church of St. Peter-in-Eastgate, Lincoln, was re-opened on the 21st ult., after improvements and additions. These consist of new vestries and organ. The vestries are situated at the western end of the church, and provide accommodation for a choir of thirty men and boys, with a separate robing room for the clergy. These are entered through a large narthex. The architect was Mr. W. Watkins, of Lincoln, and the contractors, Messrs. Pattison, of Ruskington.

Baptist Chapel and Schools, Far Cotton, Northamptonshire.—The foundation-stones of a new Baptist Church and Sunday-schools have just been laid at Far Cotton, Northampton. The architects of the new chapel are Messrs. Stevenson & Dorman, Northampton. The cost is about 3,000*l.*

Church, Gretna.—The work in connexion with the erection of the new church at Gretna has just been commenced. The building will be situated at the corner of four roads between Gretna Green and Springfield, and will accommodate over 200 persons. It is being erected from designs prepared by Mr. T. Taylor Scott, architect, of Carlisle. The contractors selected for the various trades are:—Mr. James Rae, builder, Ecclefechan; Mr. A. Tweedie, joiner, Annan; Messrs. Millar & Son, plumbers, Annan; Mr. McCulloch, painter, glazier, and decorator, Annan; Mr C. J. Nanson, slater, Carlisle; and Mr. W Norman, plasterer, Carlisle.

Proposed Exhibition, Cardiff.—A meeting of the general council of the Cardiff Exhibition was held in Cardiff Town-hall on Monday, when Mr. E. Seward, the architect, submitted plans and suggestions for the construction of the proposed exhibition buildings. The plan provides four chief ranges of buildings forming courts (north, south, east, and west), enclosing a central open court of 184 ft. by 162 ft. Around this it is proposed there should be a promenade covered way gallery. In each case the buildings are set out to contain a central nave of 50 ft. space, with side aisles of 15 ft. width. The central portion of each court would also be provided with a gallery on the first floor. Regarding the fine art department, which will form the central entrance, brick will be employed. The two entrances on the right and left may be similarly dealt with, but the remainder of the buildings will be of corrugated iron. In the concert-hall spaces had been provided for audiences of about 2,000 and 200 in the orchestra, but, in view of future exigencies, the space could be extended to provide for 4,500 or 5,000 people.

Building Extension in Leeds.—The annual report of Mr. Hainsworth, Inspector of Buildings, which has been prepared for the Leeds Building Clauses Committee, shows that the 2,017 new buildings approved include 9 villas, 30 semi-detached villas, 586 through houses, and 1,392 back-to-back houses. Among 45 miscellaneous plans were two churches, four chapels, one addition to church, two additions to chapels, five mission-rooms, a synagogue, four schools (two with swimming-baths attached), seventeen additions to schools, and other buildings of a public nature. Seven informations in the course of the year were laid before the magistrates for infringement of the law, convictions being obtained in three cases, while the others were withdrawn, as the defendants complied with the necessary requirements.

Memorial Chapel, Higher Tranmere, Birkenhead.—A chapel has just been provided for the inmates of the Birkenhead Union Workhouse, Higher Tranmere, as a memorial of Colonel Vincent Ashfield King. The chapel is situated at the north end of the workhouse. It is approached from the main internal central corridor of the main building, and opens into a porch. The chapel is seated with open pitch pine pews to seat about 300 worshippers, and consists of a nave 63 ft. by 24 ft., north and south transepts each 14½ ft. by 9 ft., chancel 20 ft. by 18 ft., and a vestry. Special pews have been arranged for the master and matron in the transepts, and also seats for the visitors. The floor of the church is laid with wood blocks, the chancel being tiled, and the sacrarium laid with encaustic tiles. The font is the old font from Oxton Church. It has been reworked and slightly reduced in size. Externally the church is built of grey brick and red stone, to harmonise with the main building of which it is now a part. The roof is slated with Bangor slates. Mr. John Thomas, of Oxton, was the general contractor. Mr. Samuel Gunning was clerk of works. Messrs. J. R. Cooper & Sons have executed the heating and lighting, assisted by Mr. John Thomas; Mr. Joseph Rogerson the carving of the corbels, and Messrs. Norbury & Co. the communion fittings. Mr. J. Francis Doyle, of Liverpool, was the architect.

Proposed New Church at Treharris.—Plans have been prepared by Mr. J. L. Pearson, R.A., London, of a new church for Treharris.

Chancel Screen, St. Paul's Church, Brentford.—The chancel-screen and gates recently erected at St. Paul's Church, Brentford, to the memory of the late Mr. Stephen Walker, have just been dedicated. The screen is of oak and rests on the stone wall between the chancel and the nave, and extends the full width of the arch. It is composed of six arches resting on octagon columns and supporting a horizontal frieze and battlemented cornice. Each of these arches is divided into two sub-arches on circular shafts. In the centre (over the gateway) is a large arch forming the passage-way for transit through the screen. The whole is surmounted by a cross in the centre. The wrought-iron gates are made to fold back over the steps during the time of service. Iron grills of the same design are also fixed on the stone wall between the oaken shafts, and these range with the top of the gates. The architects are Messrs. Shearburn, of Dorking, and the builders, Messrs. Dorey & Co., Brentford.

Fever Hospital, Shooter's Hill.—On the 31st ult. the foundation-stone was laid at Shooter's Hill of the first of a series of new fever hospitals about to be erected by the Metropolitan Asylums Board. The site of the institution comprises thirty-two acres, of which about two-thirds will be occupied by the hospital, and accommodation will be provided for 500 patients who may be suffering either from scarlet or enteric fevers or diphtheria. The cost of the new hospital, including drains, roads, yards, and boundary walls, is estimated at about 200,000*l.* Mr. T. W. Aldwinckle is the architect, and the contracts for the buildings, which will be lit throughout by the electric light, have been given to Mr. C. Wall, Messrs. Shillitoe & Son, and Messrs. H. Wall & Co.

SANITARY AND ENGINEERING NEWS.

Bridge over the Wye at Sellack.—It is proposed to erect a steel rope suspension-bridge over the River Wye at Sellack, in the County of Hereford. The plans are for a bridge, with a clear span of 180 ft., and approaches on either side, and have been prepared by the architect, Mr. Ernest Davies, of Hereford.

Sewerage Works, Whitchurch, Cardiff.—At the general meeting of the Cardiff Rural Sanitary Authority on the 11th ult., Mr. Fraser, A.M.Inst.C.E., the Engineer and Surveyor of the Authority, reported that contracts Nos. 3 and 5 of the Whitchurch sewerage had been completed. Mr. F. Ashley, of Cardiff, had satisfactorily executed contract No. 3 at a cost of 740*l.* 17s. 8d., being 11*l.* below the contract amount. Mr. John Mackay, of Newport, Monmouth, had satisfactorily executed contract No. 5 at a cost of 993*l.* 2s. 10d., or 35*l.* 6s. 2d. below the contract amount. Mr. Fraser also reported that contracts Nos. 1, 2, and 4 of the same work, being executed by Mr. E. J. Ince, of Cadorton, were progressing fairly, but that very important work had yet to be done in crossing the canal three times and the Taff Vale Railway at an important point. The engineer also submitted plans for the sewerage of East Brook and Dynas Powis at an estimated cost of 3,300*l.* The scheme was considered to be the best for the present and future requirements of the district.

STAINED GLASS AND DECORATION.

Window, West Bromwich.—On the 15th ult. a new stained glass window, which has been placed in the chancel of St. John's Church, West Bromwich, in memory of the late Mr. Richard Morris, was dedicated by the Rev. E. C. Carpenter. The window forms part of a series of subjects representing the burial and resurrection of Christ, and is the work of Mr. S. Evans, of West Smethwick.

Memorial Windows, Kidderminster.—The dedication of the memorial windows which have been placed in the clearstories of the Parish Church at Kidderminster took place on the 26th ult. The memorial consists of 12 windows, which have been designed and executed by Messrs. Hardman, Powell, & Co., of Birmingham.

FOREIGN AND COLONIAL.

France.—M. Roux, pupil of M. Cavelier and M. Barrias, has obtained the "Grand Prix de Rome for Sculpture."——A committee has been formed to raise a statue at Paris to the memory of de Tocqueville.——The Académie des Beaux-Arts has awarded the prize founded by M. Bailly, the architect, in recognition of the best completed architectural work of the year, to M. Hardy, for his work at the church of Nôtre Dame at Lourdes.——At Château Neuf de Randon, on the 19th a statue to Dugueslin is to be inaugurated.——M. Changarnier, architect, of Châlon-sur-Saône, has obtained the first premium in the competition opened by the municipality of Autun for a new Savings' Bank. The second premium was awarded to M. Truchot, of Autun.——The town of Douai is about to expend about 400,000 fr. in important street improvements, partially connected with the demolition of the fortifications.——At Nancy an interesting exhibition of local decorative art has just been opened.——At Pauillac, at the mouth of the Gironde, a long iron floating stage is being constructed parallel to the bank of the river, and connected with the bank by foot-bridges, which will enable large ships to discharge where the banking up of the sand at present renders it impossible.——The Fine Art Society of Nice is organising an exhibition to be held during the first three months of next year.——In Rue Suger, Paris, during the progress of some street excavations, a metal coffin has been discovered containing vases of antique pottery, and a red brick with a band of green and yellow enamel in the centre. The objects found have been placed in the Carnavalet Museum.——The last touch has been put to the monument erected at the Ecole des Beaux-Arts to the memory of Duban, the architect. The monument, which stands in the centre of the "Salle de l'Hemicycle," is entirely the work of M. Guillaume, the sculptor, director of the French Academy at Rome. It consists of a pedestal of white marble partly carved into the form of an infantine caryatide, supporting a bronze bust of the eminent architect, in front of a background of marble carved with branches of laurel. On the right and left are the titles of his principal works; the restoration of the Château of Blois, in 1845, those of the Sainte Chapelle and South façade of the Louvre, and the Château de Dampierre.——In the Musée Carnavalet has recently been placed a fine bas-relief by Fortin, which formerly decorated the Fontaine St. Ambroise, demolished when the Boulevard Prince Eugène was made. It represents "La Charité Offrant à Boire à de Jeunes Enfants."——The Paris municipality has definitely settled the special applications of the new museums of the city. That of the Pavillon des Champs Elysées will include painting, drawing, engraving, and pastel, and also the fine collection of ancient tapestries beonging to the city. The Musée Galliera will be devoted exclusively to modern art, and will include the works acquired every year at the Salons, more especially those which represent decorative and industrial art.

MISCELLANEOUS.

Scotch Properties for Sale.—The Glencoe estate, Argyllshire, about 6,300 acres, and embracing the mountain known as "The Pap of Glencoe," Aultchaillach grouse moor, and the Falls of Coe. Glencoe, in Lorn, lying at the head of Loch Etive, extends north-westwards for about ten miles to Ballachulish on Loch Leven. Much of its scenery is described in Macpherson's "Ossian." The peculiar name of Fingal's domain is Morven; Con-Fion, or Hill of Fingal, is on the north side of the vale through which runs the "roaring stream of Cona"; at the vale's north-west end is the scene of the massacre in the night of February 13–14, 1691, of the Macdonalds, by Captain Campbell of Glenlyon, and his party of military. The Drumcoltern estate, Kirkcudbrightshire, whereon stands the castle which, with the barony, passed to the Maxwells on the marriage of Agnes, daughter of Lord Herries of Terregles to Sir John, son of the fourth Lord Maxwell. Having since belonged to the families of Irving, Hynd, and Heron, it reverted twenty years ago to the Maxwells. The castle stands three stories high, with an attic in the roof; measures 36 ft. by 29 ft., and has a vaulted kitchen for ground floor, with one apartment in each of the floors above. The staircase tower, rising above the landing on to the battlements, contains a little guard, or watch, room. In their work upon the Castellated and Domestic Architecture of Scotland, Messrs. David MacGibbon and Thomas Ross point out a peculiarity of the fabric: the tower angles are splayed away, and, as the walls generally, are built of small rubble, with a larger stone here and there. They are of opinion that it was built about the middle of the sixteenth century.

The Carpenters' Company.—In the secretary's report to this company for the past year, it is mentioned that "the premises which were mentioned in the last report as having been taken in Great Titchfield-street were opened in October last. They are called the Carpenters' Company Trades Training School, and no one is admitted as a student who is not absolutely engaged in the trade for the benefit of which the class is established. Up to the present time the companies who have joined and who have classes for teaching their respective trades are the following:—The Tylers and Bricklayers, the Wheelwrights, the Painter Stainers, the Plasterers, and the Masons, so that there is instruction being given in each of the above trades, and in carpentry and joinery, which classes are carried on by the Carpenters' Company. The Institute of British Wood Carvers occupy one end of the building, and the increased accommodation which they have, compared with that at Chapel-street, is a great advantage to the students. The number of students in all the classes since the commencement is 140."

"Elevator" Cars.—The Otis Elevator Company are now making the travelling cars for their lifts largely of decorative open wrought-iron work. Some of the designs, of which illustrations have been sent to us, are very creditable in design as far as the wrought-iron work is concerned. They are, of

course, glazed where the open work is used. The object seems to be to give the cars a more decorative appearance as seen from the outside.

FOOTPATHS.—In the annual report of the Borough Surveyor of Richmond, Mr. Lovegrove, we observe mention of a new and economical way of treating footpaths. The report says: "A new method of treating gravelled paths was introduced in Kew-road, where the foot traffic renders it almost impossible to keep the stones down: a length of path opposite the Athletic Ground, and also across Kew Green, was simply brushed over with tar and covered with sea-shell, the cost being about 2½d. per yard super., and in result a smooth, even path was obtained. Now that the Town Council have the maintenance of over two-and-a-half miles of river path, this would be the most economical and satisfactory way of dealing with the walk."

NEW FORM OF DUST-TRAP.—Messrs. Hall, Beddall & Co. send us a description and illustration of a new form of semicircular metal hopper for communication with a dust-shoot. It is fixed in the wall of the shoot, so as to turn horizontally on its axis, which is flush with the wall face. A handle at right-angles to the axis gives it a quarter-circle turn outwards, disclosing the opening of the hopper or box, in which the dust is deposited; by reversing the handle the dust is discharged down the shaft, and at the same time the hopper opening is closed towards the exterior of the shaft, thus preventing the dispersal of dust particles in the air. It seems a simple and useful patent.

NATIONAL ASSOCIATION OF MASTER BUILDERS OF GREAT BRITAIN.—The National Association of Master Builders of Great Britain held its Thirty-third Half-yearly Meeting in the Mayor's Dining Room, Town Hall, Bolton, on the 24th ult. County Alderman John Bowen, J.P., Birmingham, the President, presided, and representatives were present from London, Liverpool, Birmingham, Manchester, Huddersfield, Northampton, Derby, Leicester, Bradford, Leeds, Bristol, Hull, Preston, Bolton, Wigan, Burslem, Hanley, Tunstall, Longton, Walsall, and Southport. The Council reported having issued to the members the customary tabulated statement of hours worked, state of trade, and supply of labour in the principal towns in the United Kingdom. The report for the past half-year was read and discussed, and ordered to be printed and circulated. The Treasurer, Mr. C. W. Green, Liverpool, in submitting his statement of accounts for the past half-year, congratulated the Association upon its sound financial condition. The council reported that the form of contract now under consideration had not yet come to a satisfactory issue, but it was hoped that the Royal Institute of British Architects and the Institute of Builders, who had the matter in their hands, would do their utmost to bring the matter to a close as speedily as possible. Alderman Jessop, Huddersfield, gave a short description of the dispute with the masons, and expressed his opinion that the rule, now in force in many places, prohibiting worked stone being brought in the town, acted very prejudicially to all parties concerned, and expressed a hope that the members would do all in their power to get such an objectionable rule as this expunged. Several other matters of special interest to the building trade were brought forward and discussed, and it was decided to hold the next meeting at Birmingham.

ST. MARY'S CHURCH, NORTON-SUB-HAMDON.—On the morning of the 29th ult., the tower of this church was struck by lightning. The whole of the inside, consisting of a peal of five bells, the clock, the chimes, with all the wood and lead work, were in a short time destroyed by fire. But for the timely arrival of the fire-engine, with the rapid efforts of the fire brigade, and the energetic assistance of all the parishioners who could help, the church would also have perished, with the exception of the stone walls. The walls of the tower stand, but are considerably injured.

THE MANCHESTER SOCIETY OF ARCHITECTS.—A valuable addition to the architectural works in the library of this society has just been placed on the shelves at 36, George-street—namely, thirty-five volumes presented by Mrs. Whitaker, the widow and executrix of the late William Wilkinson Whitaker, architect, of Cornbrook House, Manchester. The folio volumes include several works by Sir M. Digby Wyatt, "The Ecclesiastical Architecture of Italy," by Henry Gully Knight, "Henry VII. Chapel, Westminster," by Cottingham, and "St. Stephen's Chapel," by Mackenzie, and other valuable works. Mrs. Whitaker also supplemented her gift by a liberal donation in money for the purchase of other books.

COMMISSION OF SEWERS.—The Commissioners of Sewers, at the last meeting previous to the vacation, which concludes on September 25, had under consideration, among other matters, the question of appointing a representative to the International Congress of Hygiene at Buda-Pesth, the erection of baths and wash-houses in the City, and the scheme for supplying telephones to the citizens generally at a cost much less than is at present incurred by the users of telephones. After some demur on the score of expense, the Chairman, Professor Banister Fletcher, who has been elected President of the 10th Section (Hygiene of Dwellings) of the Congress of Hygiene, was appointed to represent the Commissioners at the Congress. The report of the Sanitary Committee recommending steps to be taken without delay to introduce a Bill into Parliament to provide baths and wash-houses in the City worthy to be compared with similar establishments in other great cities of the world was again adjourned, the principal discussion turning upon the question of electric lighting. A year ago, the Commissioners passed a resolution not to consent to the use of certain tubes laid by the Electric Lighting Company for telephonic purposes, unless a guarantee was given by the company that telephones with double wires and all the latest improvements should be supplied to the citizens at a cost not exceeding 8*l.* a year. Mr. Pannell now moved that the resolution be rescinded, on the ground that the resolution blocked the way to any reduction in the charge now made by the National Telephone Company, which amounted to 20*l.* a year. After a long and animated discussion, Mr. Pannell's resolution was carried on a division by 33 to 14. Another matter which led to a long discussion was the continued delay in proceeding with the plans and estimates for the new offices proposed for the commission in Basinghall-street, in consequence of the opposition of the Guildhall Library Committee, who averred that if the plans were proceeded with great injury to the lights and approaches to the Library would result. The question was eventually left as it stood on July 17, for a conference to take place as early as convenient between the various committees interested.

THE ROMAN WALL, CUMBERLAND.—Some important excavations, says the *Manchester Guardian*, have lately been commenced on the line of the Roman Wall in Cumberland, under the superintendence of Professor Pelham, Mr. Haverfield, and other Oxford archæologists, acting in conjunction with the local antiquarian society. The first object of the excavators has been to explore the Vallum and to trace the connexion between it and the Wall, and sections have been made accordingly at various places between Carlisle and Castlesteads. At Brunstock Park, about three miles east from Carlisle, trenches were dug from the north side of the Wall to the south of the Vallum. The foundations of the Wall were discovered, and close behind it the appearance of a paved footway. A few paces further south the diggers came upon the Roman road. The road was made with large stones in the centre and on the kerb, on clay basis, and a packing of freestone and clay, with gravel above. Further to the south lay the Vallum, with its ditch and three mounds, and immediately to the north of it a small ditch not unlike the *Gräbchen* which the German excavators have lately found on the Limes. At Whitemoss, Bleatarn, and Chapelfield (near Irthington) other sections have been dug, with curious results. At Bleatarn a quarry has been traced, out of which the Wall was possibly constructed. In August further sections will be made in the eastern part of Cumberland, near Lanercost, and digging has also begun in Northumberland.

DISPUTE IN THE BLACKBURN BUILDING TRADE.—Another dispute has arisen in the building trade at Blackburn. When a settlement of a six months' strike was effected last November, the question of non-society workers was left in the hands of the men. The unionists have failed to induce non-society workers to leave the town or to join the local societies, and as the firms employing them have declined to discharge them, the unionists have withdrawn from firms employing non-society men.

MEETINGS.

FRIDAY, AUGUST 3.

British Archæological Association.—Annual Congress, Manchester (continued).

Liverpool Engineering Society.—Excursion to the Oswestry reservoir and filter beds, masonery dam, and tower, at Lake Vrynwy.

SATURDAY, AUGUST 4.

British Archæological Association.—Annual Congress, Manchester (concluded).

Liverpool Engineering Society.—Excursion (second day).

MONDAY, AUGUST 6.

Architectural Association Camera Club.—Visit to Canterbury.

TUESDAY, AUGUST 7.

Glasgow Architectural Association.—Visit to Belmont Established Church, Hillhead.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

15,012.—WINDOW-SASHES: *F. Brierley and another.*—This invention relates to a means or device for supporting window-sashes or frames within their casements in any desired position without the use of cords or weights. The invention is particularly adapted to carriage windows or sliding window-sashes and frames generally. A spring piece and a pulley or roller are main features in the invention.

18,084.—DISINFECTING GULLIES: *M. Miller.*—The object of the invention is to store disinfecting material beneath the gullies or grating so that gases must pass over the substance, or water or fluids must carry some portion into the drain. For this purpose a small tray, holding some disinfectant more or less soluble, is fixed under the grating of the gulley.

1,633.—SYPHON CISTERNS: *W. Sharp.*—A novel arrangement acting by suction, in which a hood, a cover, and a stand-pipe are employed, causing a certain and quick flush from the cistern.

5,695.—WATER-CLOSETS: *R. Schleicher and another* (Munich).—Consists in forming an enlarged chamber behind the water seal at the bottom of the pan in which the excreta is retained a certain time in order to effect a more complete decomposition of the same before it passes into the drain-pipes. The invention also comprises the arrangement of an easily detachable cover to inspection or retaining chamber, by which the latter is easily accessible for cleaning purposes.

8,729.—FRENCH WINDOWS: *A. Lewin* (Berlin).—A device to prevent the closing of sashes of French windows by pressure of wind, &c. It consists of a lever catch turned by a spiral spring around a pin fixed to the window-frame so that the catch enters into the space between the frame and the sash as soon as the latter has been opened.

9,171.—SLIDING WINDOWS &C.: *W. Whitley.*—Efficient and comparatively inexpensive means are provided whereby one sash counterbalances the other, and the coupling parts between the two are so constructed that they may be adjusted to meet any irregularities or differences between the relative positions of the sashes by which the mounting and fixing in position of the sashes is greatly facilitated. The fittings allow the lower sash to be readily dislodged or detached.

9,208.—TRAVELLING HANGERS FOR DOORS, &C.: *J. T. McCave.*—A cheap, frictionless travelling hanger on which a door or gate is hung so as it can be moved in a predetermined direction with as small an expenditure of applied force as possible. A "hanger-strap" and ball bearings are essential features of the invention.

9,735.—BLOWERS FOR VENTILATORS: *E. Hocheim* (Germany).—An improved form of vane for the blower curvilinear with three curved surfaces—and an improvement in fixing them upon the shaft.

NEW APPLICATIONS FOR LETTERS PATENT.

JULY 16.—13,655, J. Cuffling and others, Hand Circular-saw.—13,671, R. Cussons, Binding together the Framework of Windows or other similar Structures.—13,689, E. Highton, Syphon Water Waste-preventers for Flushing Purposes.—13,692, J. Spencer, Constructural Arrangements of Buildings.—13,701, T. Peard, Spring Centres for Swing-doors.—13,702, W. Perry, Central Ventilation for Dwelling-houses and Public Buildings.

JULY 17.—13,731, W. Ward, Turn-screw.—13,732, J. Shanks, Water-closet Apparatus.—13,736, S. Hazeland, Machine for Planing Wood.—13,782, S. Jennings and J. Morley, Water-closets and Apparatus for Flushing same.

JULY 18.—13,804, T. Robinson, Connecting Metal and Earthenware Pipes together, also applicable for Connecting Metal Pipes together.—13,806, E. Astle and C. Terry, Chimney and Ventilator Hood for Fixing on the outside of Chimneys, Ventilators, &c.—13,810, E. Kendall, Reversible Window-sashes and Frames.—13,813, W. Wilkinson and H. Alexander, Brick-making Machinery.—13,814, W. Wilkinson and H. Alexander, Brick and Tile Presses of the "Titley" type, &c.—13,860, D. Dawson, Sash-fasteners.—13,867, H. Fletcher, Chimney-tops.

JULY 19.—13,889, C. Lea, Simplex Door-handle.—13,926, J. Fillol and others, Treatment of Wood for Preserving, &c.—13,945, E. Barger, Producing the Circulation of Air in Heating and Ventilating Systems, &c.—13,931, J. Bartlett, Nail for Securing Roofing Tiles, Slates, &c.

JULY 20.—13,950, H. Swann, Sash-stop and Window-fastener or Mortice Lock.—13,955, G. Atherton and T. Gare, Hand or Pad Saw.—13,991, W. Gibbin, jun., Window-sashes.

JULY 21.—14,018, J. Russell, Imitation Stained Glass.—14,027, H. Dawson, Sliding and Hinged Window-sash and Door-fasteners.—14,081, F. Stolte, Fireproof Ceilings and Floors.

PROVISIONAL SPECIFICATIONS ACCEPTED.

11,356, J. Bayly, Spring Door-catches.—12,276, J. Graves, Sheet-metal Mantels.—12,354, R. Hodges and S. Hill, Fastenings for Fanlights, &c.—12,457, B. Heymanson, Bottom Bolt Spring Socket for Folding Doors.—12,525, C. Whitehall, Attaching Door-knobs to their Spindles.—13,614, A. Dyson, Water-closets.—12,701, J. Holt, Combined Hammer and Screw-driver.—12,905, C. Knox, Roofing Tiles.—12,947, J. Sumner, Attaching Door-knobs, &c., to their Spindles.—12,958, J. Keith, Radiators for Heating and Ventilating.—12,961, J. Lees and others, Wood-planing Machines.—12,995, P. Schmahl, Ladders.—13,145, L. Josset, Luminous Paint.—13,182, C. Richardson and E. Herbert, Electric Light Ceiling Roses.

COMPLETE SPECIFICATIONS ACCEPTED.

(Open to Opposition for Two Months.)

17,344, J. Mather, Ball Taps.—3,544, R. Baxendale, Chimney-pots, &c.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

JULY 17.—By *J. Egginton*, in conjunction with *Debenham, Tewson, & Co:* "The Bere Court Estate," Pangbourne, Berks, f. farm, 163 a. 2 r. 30 p., r. 70*l.*, 1,500*l.*; "Maidenhead Hatch Farm," 311 a. 2 r. 13 p., r. 135*l.* 3s., 4,000*l.*; f. arable and woodland, 93 a. 3 r. 17 p., r. 55*l.*, 1,700*l.*; f. building land, 58 a. 3 r. 14 p., 4,250*l.*; f. agricultural land, 85 a. 3 r. 11 p., 1,800*l.*; f. farm, 72 a. 2 r. 4 p., r. 75*l.*, 2,500*l.*; "Pangbourne Marsh Farm," 130 a. 3 r. 33 p., r. 119*l.* 13s., 3,100*l.*; f. meadow land, 44 a. 2 r. 6 p., r. 80*l.*, 2,900*l.*; "Woodborough House," r. 35*l.*, 630*l.*; "Mill House and Corn Mill," 2 a. 1 r. 37 p., 1,500*l.*; "Shooter's Hill House," 11 a. 0 r. 31 p., r. 180*l.* 7s. 8d., 5,650*l.*; part of "Pangbourne Wharf," 0 a. 3 r. 25 p., 400*l.*; a plot of f. land, 0 a. 1 r. 36 p., 500*l.*; f. meadow land, 0 a. 3 r. 24 p., 700*l.*; two f. houses with shops, r. 53*l.* 10s., 1,510*l.*; five f. houses, 1,580*l.*; f. house and numerous cottages with gardens, 3,425*l.*

July 23.—By *H. Hemming:* "The Butterstocks Estate" of 308 a. 3 r. 28 p., near West Grinstead, Sussex, f., 1,900*l.*—By *R. Haddock:* "Gladstone House," Western-rd., Mitcham, f., r. 34*l.*, 500*l.*; "Wharfdale Lodge," West Croydon, f., 800*l.*—By *Harman Bros.:* 20, Dunsmure-rd.,

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENT.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Schools, &c.	Hartlepool Sch. Bd.	.....	Sept. 30
*Municipal Buildings	King's Lynn Corp.	21*l.* and 10*l.* 10s.	Nov. 1
*New County Offices	Durham C. C.	200*l.* and 100*l.*	Nov. 30
*Museum for Antiquities, Cairo	Egyptian Government	First 600*l.* and 400*l.* between the next four	Mar. 1, '95

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered
*Alterations to Workhouse	Fulham Union	A. Saxon Snell	Aug. 4
House and Shop, Brook-street, Carlisle	.....	W. Pogson	Aug. 7
*Roadmaking and Paving Works	Willesden Local Board	O. Claude Robson	do.
*Gas Fittings to Hospital, Stonebridge	do.	do.	do.
Sewerage Works	Navan (Ireland) Union	A. Scott	Aug. 8
Road Works, Chester-street, &c.	Chesterfield Corp.	N. Dunscombe	do.
Reconstructing Baths, Guildford-crescent	Cardiff Corporation	W. Harpur	do.
Additions to 25, Bondgate Without, Alnwick	Hardy Bros.	M. Temple Wilson	do.
Paving Setts, &c. (14,000 ft.)	Dublin Corporation	S. Harty	Aug. 9
Chapel, Ford-street, Coventry	Primitive Methodists	J. Willis	do.
Houses, Rosemont-place, Aberdeen	Northern Co-op. Soc. Lim.	Alex. Mavor	do.
*Additional Shedding, Bristol	M. R. Co.	*Official*	do.
Police Station, Aldeburgh, Suffolk	East Suffolk C. C.	H. Miller	Aug. 10
Sewerage Works, near Wakefield	Hemsworth U.R.S.A.	Mr. Richardson	Aug. 11

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Additions to Plough Inn, Powburn, Alnwick	J. R. C. Ellison	Geo. Reavell	Aug. 11
Two Houses, Newcastle, co. Down, Ireland	Alex. Mulligan	Hy. Hobart	Aug. 12
Twenty-one Cottages, High Moor Top, Killamarsh	Worksop and Retford Brewery Co.	Jno. Allsopp	Aug. 13
*Public Offices and County Court	Merthyr Tydfil Loc. B.	E. A. Johnson	do.
*Removal of Dust, &c. Supply of Barges	Islington Vestry	*Official*	do.
Mortuary Church, Cwmgelly	Swansea Town Council	do.	do.
*Water Supply Works	Lostwithiel (Cornwall) Corporation	S. W. Jenkin & Son	do.
*Supply of Road Materials, Cartage, &c.	East Barnet Valley Local Board	G. W. Brumell	Aug. 14
*Painting Schools, Hanwell	Cent. Lond. Sch. Dist.	A. G. Langdon	Aug. 18
*Water Mains, Service Reservoir, &c.	Worthing Corporation	J. Mansergh	Aug. 27
Bridge, Bassenthwaite	Joseph Bowman	.....	No date
Miners' Hall, Ashington, Durham	.....	Boolds & Hardy	do.
Villa Residence, Danven, Lancs.	.....	J. B. Thornley	do.

PUBLIC APPOINTMENT.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*County Surveyorship (Ireland)	Civil Service Com.	.....	Aug. 8

Those marked with an asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv., vi. *and* viii. *Public Appointment, pp.* xviii *and* xx.

Stamford Hill, u.t. 90 yrs., g.r. 9*l.* 10s., 550*l.*; 95, Everingrd., Stoke Newington, u.t. 83 yrs., g.r. 7*l.* 7s., 400*l.*—By *Reynolds & Eason:* 20, Hanover-st., Islington, f., 475*l.*; 15, High-st., Hornsey, f., r. 75*l.*, 1,580*l.*—By *Maddox, Son & Green:* 17 Conduit-st., Bond-st., Corporation lease, r. 375*l.*, 6,500*l.*; 11, Stanhope-pl., Hyde Park, u.t. 9½ yrs., g.r. 26*l.*, r. 220*l.*, 1,170*l.*; 14, Connaught Mews, u.t. 9½ yrs., no g.r., r. 40*l.* 10s., 300*l.*; 12, Stanhope-pl., u.t. 9½ yrs., g.r. 26*l.*, r. 250*l.*, 1,320*l.*; 110, Crawford-st., Marylebone, u.t. 9½ yrs., g.r. 5*l.* 5s., r. 90*l.*, 290*l.*; 4, 6, 10, Clifton-rd., Maida Vale, u.t. 66 yrs., g.r. 62*l.*, r. 590*l.*, 3,900*l.*; No. 1, Montagu-sq., profit rental of 45*l.* u.t. 7 yrs., 165*l.*—By *A. H. Turner & Co.:* "Firs Cottage," East Sheen, with grounds, f., 1,000*l.*

July 24.—By *H. Kemp:* 47, Lant-st., Borough, f., r. 41*l.* 12s., 375*l.*; 17 to 23 (odd), Duffield-st., Battersea, u.t. 58 yrs., g.r. 16*l.*, r. 97*l.* 10s., 485*l.*; No. 754, Old Kent-rd., u.t. 18 yrs., g.r. 4*l.* 17s. 6d., 210*l.*—By *B. Brown:* 17 to 22, Elphick-st., Canning Town, u.t. 77 yrs., g.r. 16*l.* 19s., 315*l.*; 2, Redwald-st., Clapton, u.t. 83 yrs., g.r. 5*l.*, 85*l.*; l. land, 4 acres, Temple Mill-lane, Stratford, u.t. 57 yrs., g.r. 50*l.*, 810*l.*; l. land, 3¾ acres, u.t. 53 yrs., g.r. 22*l.* 10s., 10*l.*—By *Debenham, Tewson, & Co.:* 36, Clifton-gardens, Maida Vale, u.t. 54 yrs., g.r. 11*l.*, 500*l.*; 15, Clifton-rd., Camden-sq., u.t. 56 yrs., g.r. 8*l.*, r. 50*l.*, 360*l.*—By *J. G. Hammond:* 6, Harman-st., Kingsland, u.t. 48 yrs., g.r. 5*l.* 10s., r. 45*l.*, 400*l.*—By *Holcombe & Betts:* "Lawbrook" and 7½ acres, Shere, Surrey, f., r. 200*l.*, mortgage 2,000*l.* included, 2,755*l.*; 23, Cardwell-rd., Tufnell-pk., u.t. 72 yrs., g.r. 8*l.*, r. 45*l.*, 450*l.*; 19, Albany-rd., Old Kent-rd., f., r. 28*l.*, 420*l.*; 1, Great College-st., Westminster, u.t. 12 yrs., g.r. 90*l.*, 300*l.*

July 25.—By *W. Simmonds:* 82, Camberwell-rd., f., r. 60*l.*, 900*l.*; 34, 36, Brisbane-st., Camberwell, f., 200*l.*—By *Charles & Tubbs:* 1 to 5, Barbican, City of London, f., r. 680*l.*, 9,900*l.*—By *F. W. Chard & Co.:* 22, Holland-rd., Brixton, u.t. 28 yrs., g.r. 5*l.* 10s., r. 34*l.*, 150*l.*; 36, 38, Holland-rd., u.t. 28 yrs., g.r. 11*l.*, r. 63*l.*, 315*l.*—By *Dyer, Son & Hilton:* 11, 12, The Villas, Erith, f., r. 90*l.*, 670*l.*; 17, 18, The Villas, f., r. 84*l.*, 770*l.*; 16, 17, 18, Victoria-st., Belvedere, f., 270*l.*; a plot of f. land, Victoria-st., 150*l.*; f. land, 5a. 1r. 13p., Horley, Surrey, 1,050*l.*; 6, 8, Middleton-rd., Kingsland, u.t. 43 yrs., no g.r., r. 80*l.*, 630*l.*; No. 17 and 14, Regent's-bldgs., Regent's-sq., u.t. 11 yrs., g.r. 14*l.*, r. 70*l.* 10s., 240*l.*—By *Rushworth & Stevens:* "The Swan's Nest Tavern," Great Swan Alley, City of London, r. 204*l.*, 5,400*l.*; 12, Great Swan Alley, f., r. 60*l.*, 1,130*l.*—By *Douglas Young:* No. 175, Clapham-rd., u.t. 34 yrs., g.r. 5*l.*, r. 50*l.*, 370*l.*; 20, Grove-rd., Brixton, u.t. 31 yrs., g.r. 11*l.*, 540*l.*—By *H. Griffin:* Two plots of f. land, Gibbon-rd., Kingston-on-Thames, 210*l.*; 3, Knox-rd., Clapham, g., 270*l.*; 39, 40, Frances-st., Battersea, u.t. 57 yrs., g.r. 6*l.*, 205*l.*—By *Weatherall & Green:* 82, 83, North Side, Clapham Common, f., 5a. 1r. 15p., 21,800*l.*—By *Daniel Smith, Son, & Oakley:* "The Shoreham Place Estate," Kent:—Otford, ten f. cottages with gardens, r. 74*l.* 14s., 1,150*l.*; "Parsonage House" and 2 acres, f., r. 17*l.*, 410*l.*; f. outbuildings and 1 a. 2 r. 10 p., r. 8*l.* 10s., 225*l.*; f. land, 66 a. 2 r. 36 p., r. 133*l.* 6s., 2,800*l.*; f. land, 37 a. 1 r. 5 p., three lots, r. 29*l.*, 645*l.* Shoreham: "Shoreham Post Office, r. 33*l.*, 580*l.*; f. water meadow, 3 a. 2 r. 20 p., r. 16*l.*, 350*l.*; house and shop and 1 a. 0 r. 36 p., f., r. 21*l.*, 350*l.*; a plot of f. land, 0 a. 2 r. 13 p., r. 5*l.*, 140*l.*; two f. cottages, r. 12*l.*, 155*l.*; "Oxbourne House," and 4 a. 1 r. 22 p., r. 62*l.*, 1,250*l.*; f. land, 10 a. 3 r. 29 p., r. 12*l.*, 350*l.*; f. fruit land, 6 a. 3 r. 2 p., r. 20*l.*, 500*l.*; The "Shoreham Mission Chapel," r. 10*l.*, 125*l.*; f. land, 13 a. 3 r. 36 p., r. 12*l.*, 530*l.*; Halstead: f. land, 7 a. 3 r. 35 p., r. 8*l.*, 650*l.*; f. fruit land, 5 a. 3 r. 11 p., r. 21*l.* 6s. 6d., 320*l.*; f. land, 9 a. 1 r. 9 p., r. 8*l.*, 480*l.*; f. orchard, 1 a. 3 r. 7 p., r. 4*l.*, 160*l.*; f. land, 33 a. 0 r. 3 p., r. 61*l.* 18s., 1,300*l.*

July 26.—By *Hampton & Sons:* "Barham Lodge," Weybridge, and 6½ acres, f., 5,000*l.*—By *Beard & Son:* 66, Richmond-rd., Kingston, u.t. 85 yrs., g.r. 8*l.*, r. 40*l.*, 400*l.*—By *J. J. Kelf:* F.g.r of 46*l.*, Erskine rd., Walthamstow, reversion in 90 yrs., 1,125*l.*: 14 to 20 (even), Telford-rd., u.t. 89 yrs., g.r. 21*l.*, 260*l.*; 31 to 37 (odd), Telford-rd., u.t. 89 yrs., g.r. 21*l.*, 260*l.*—By *Newbon & Co.:* 90, George's-rd., Holloway, and 7, Hope-st., f., r. 46*l.* 10s., 390*l.*: 23, Corinne-rd., u.t. 74 yrs., g.r. 5*l.* 5s., r. 32*l.*, 250*l.*; 23, 27, Sumatra-rd., Hampstead, u.t. 88 prs., g.r. 12*l.*, r. 63*l.*, 565*l.*; 20, Broomsleigh-st., u.t. 89 yrs., g.r. 6*l.*, r. 30*l.*, 240*l.*; 7, Irene-rd., Fulham, u.t. 85 yrs., g.r. 6*l.*, r. 32*l.*, 265*l.*; 110, 112, and 122, Shakespeare-rd., Stoke Newington, u.t. 57 yrs., g.r. 18*l.* 6s., rent 108*l.*, 800*l.*—By *Stimson & Sons:* F. house and 2 acres, Pollards Hill North, Norbury, 980*l.*; 1, 2, Rose Cottages, Merton, u.t. 42 yrs., g.r. 4*l.* 14s., 200*l.*; 50 to 57, St. Pauls's-rd., Kennington, u.t., 46 yrs. g.r. 32*l.*, 1,090*l.*; 129, 131, Stanstead-rd., Forest Hill, f., r. 80*l.*, 1,000*l.*; 3, 5, 11, St. Germains-rd., f., r. 136*l.*, 1,450*l.*; 39 to 49 (odd), Brockley Rise, u.t. 70 yrs., g.r. 21*l.*, 910*l.*; 5, 7, 9, Cramptон-rd., Penge, f., 750*l.*; 89, Maple-rd., u.t. 71 yrs., g.r. 10*l.* 10s., r. 40*l.*, 300*l.*; 1, 3, Morland-rd., Beckenham, u.t. 77 yrs., g.r. 7*l.*, 390*l.*; three sets of stabling, Station-rd., Norwood, u.t. 64 yrs., g.r. 4*l.*, r. 60*l.*, 350*l.*—By *Beardmore & Webb:* 1, Leybourne-ter., Kew Gardens, u.t. 94 yrs., g.r. 4*l.* 10s., 375*l.*—By *H. J. Bliss & Sons:* 45, 47, Pownall-rd., Dalston, u.t. 51 yrs., g.r. 9*l.*, r. 66*l.*, 620*l.*—By *Farebrother, Ellis, & Co.:* No. 512, Brixton-rd., f., r. 275*l.*, 4,680*l.*; f.g.r. of 63*l.* 5s., Central Hill, Norwood, reversion in 83 yrs., 1,585*l.*; f.g.r. of 37*l.* 4s., Vermont-rd., ditto in 83 yrs., 930*l.*—By *C. C. & T. Moore:* 98 to 106 (even), Ben Johnson-rd., Stepney, u.t. 22 yrs., g.r. 17*l.* 10s., 475*l.*; 66, 68, Angrave-st., Haggerston, u.t. 45 yrs., g.r. 6*l.*, r. 62*l.* 8s., 300*l.*; "Clarence Lodge" and "Avondale Lodge," Cambridge-rd., Leytonstone, f., r. 72*l.*, 1,000*l.*; "Minerva Lodge," "Connaught Lodge," and "Albert Lodge;" f., r. 100*l.*, 1,385*l.*; "Milton Lodge," "Herbert Lodge" and "Richmond Lodge," f., r. 90*l.*, 1,225*l.*; 1 to 8, Capworth-st., Leyton, f., 1,400*l.*; a plot of f. land, Lindley-rd., 50*l.*—By *Worsfold & Hayward*, at Dover: 10, 12, Belgrave Gardens, Dover, f., r. 66*l.*, 1,060*l.*; 1, 2, 3, Finnis Hill, f., 385*l.*; 1 to 4, Harold Cottages, St. Margaret's, f., 260*l.*; f. meadow land, 4a. 2r. 6p., 230*l.*; f. cottage and shop, r. 10*l.* 10s., 165*l.*

July 27.—By *E. Smith & Co.:* Nos. 46 to 66 and 60A, Vauxhall Bridge-rd., and 1 to 7, Carey-pl., u.t. 6¾ yrs., g.r. 4*l.* 11s. 8d., 1,950*l.*—By *Jenkins & Son:* 361, Caledonian-rd., Islington, u.t. 48 yrs., g.r. 8*l.*, r. 46*l.*, 305*l.*—By *R. Reid:* I.g.r. of 100*l.* 10s., Cathcart-st., &c., Kentish Town, u.t. 27 yrs., g.r. 21*l.* 4s., 1,070*l.*; i.g.r. of 105*l.*, Raglan-st., &c., u.t. 30 yrs., g.r. 35*l.*, 1,020*l.*; i.g.r. of 48*l.*, Boundary-rd., &c., Notting Hill, u.t. 72 yrs., g.r. 12*l.*, 535*l.*; i.g.r. of 22*l.*, Bessborough Mews, &c., Pimlico, u.t. 48 yrs., g.r. 4*l.*, 340*l.*—By *Baker & Sons:* "Dean Farm," near Kimbolton, 218 a. 2 r. 36 p., f., r. 110*l.*, 2,290*l.*; 41, 43, Grove Lane, Camberwell, f., r. 77*l.* 12s., 620*l.*—By *Messrs. Woods:* "The Lord Nelson Tavern," Whitechapel-rd., u.t. 279 yrs., g.r. 50*l.*, 1,180*l.*; 90 to 96 (even), West India Dock-rd., f., 2,000*l.*; 24, High-st., Poplar, c., r. 24*l.*, 235*l.*; 79, 81, The Grove, Stratford, f., 1,685*l.*—By *W. B. Hallett:* 9, Shelburne-rd., Holloway, u.t. 49 yrs., g.r. 6*l.* 6s., r. 38*l.*, 375*l.*—By *R. Tidey & Son:* i.g.r. of 50*l.*, Oxford-rd., &c., Islington, u.t. 51 yrs., g.r. 15*l.* 10s., 680*l.*; 65, Oxford-rd., u.t. 58 yrs., g.r. 7*l.*, r. 44*l.*, 360*l.*; 29, Halliford-st., u.t. 51 yrs., g.r. 5*l.*, r. 40*l.*, 310*l.*; 50, Popham-rd.; and 165, Shepperton-rd., u.t. 48 yrs., g.r. 10*l.*, 300*l.*; Nos. 72, 79, Green Lanes, u.t. 69 yrs., g.r. 14*l.*, r. 110*l.*, 1,265*l.*; 104, 106, De Beauvoir-rd., Kingsland, u.t. 27 yrs., g.r. 6*l.* 15s., r. 70*l.*, 455*l.*; 7, Herbert-st., Hoxton, u.t. 48 yrs., g.r. 5*l.* 5s., r. 34*l.*, 300*l.*; 13, Canonbury Grove, Canonbury, u.t. 24 yrs., g.r. 6*l.* 6s., 275*l.*

[*Contractions used in these Lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. fo; estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent r yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.

Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I.	load	10/0/0 16/0/0
Sequoia, U.S.ft.cu		2/3 2/6
Ash, Canada load		2/15/0 4/0/0
Birch, do.		2/10/0 3/15/0
Elm, do.		3/10/0 4/15/0
Fir, Dantsic, &c.		1/5/0 3/5/0
Oak, do.		2/10/0 4/10/0
Canada		6/0/0 7/10/0
Pine, Canada red		2/15/0 3/5/0
Do. Yellow		2/15/0 5/0/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg		5/0/0 6/10/0
Wainscot, Riga, &c., log		2/10/0 4/15/0
Odessa, crown		2/10/0 4/15/0
Deals, Finland 2nd & 1st std 100		7/10/0 9/10/0
Do. 4th & 3rd		7/0/0 8/10/0
Do. Riga		7/10/0 9/0/0
St. Petersburg, 1st yellow		10/0/0 13/10/0
Do. 2nd yellow		8/10/0 10/5/0
Do. white		8/10/0 11/0/0
Swedish		7/10/0 15/10/0
White Sea		7/0/0 15/10/0
Canada, Pine 1st		22/10/0 29/0/0
Do. do. 2nd		17/0/0 18/0/0
Do. do. 3rd, &c.		7/10/0 10/5/0
Do. Spruce, 1st		9/0/0 11/0/0
Do. do. 3rd & 2nd		6/10/0 7/10/0
New Brunswick		6/0/0 7/5/0
Battens, all kinds		3/0/0 25/0/0
Flooring boards, sq., 1 in. prep. 1st		0/9/6 0/14/6
Do. 2nd		0/7/0 0/11/6
Other qualities—		0/5/0 0/6 6
Cedar, Cuba .. ft.		3d 4d
Honduras, &c.		3d 4d
Mahogany, Cuba		3d 6
St. Domingo, cargo av.		8 1/6
Mexican do. do.		3 4
Tobasco do. do.		3d 6
Honduras do.		3d 5d
Box, Turkey ton		4/0/0 13/0/0
Rose, Rio		7/0/0 18/0/0
Bahia		6/0/0 17/0/0
Satin, St. Domingo		0/0/5 0/1/0

TIMBER (*continued*).

Satin, Porto Rico	0/0/6	0/1/6
Walnut, Italian	0/0/3½	0/0/7

METALS.

Iron—Pig, in Scotland	ton	2 2 0½ 2 6 0
Bar, Welsh, in London		5/12 6 5 15 0
Do. do. at works in Wales		5/2/6 5/7/0
Do. Staffordshire, in London		6/0/0 6/10/0
Copper—British cake and ingot		4£/10/0 41 10 0
Best selected		41/0/0 41 10 0
Sheets, strong		49/0/0 0/0/0
Chili, bars		38/2/6 38/7/6
Yellow Metal	lb	0/0/4 0/0/4½
Lead—Pig, Spanish	ton	9/10/0 9/12/6
English com. brands		9/12 6 9/13/0
Sheet, English, 6 lbs. per sq. ft. and upwards		10/15/0 0/0/0
Pipe		11/5/0 0/0/0
Zinc—English sheet	ton	19/0/0 19/0/0
Vieille Montagne		19/10/0 0/0/0
Tin—Straits		65/17 6 66/0 0
Australian		66/7/9 66 17 6
English Ingots		67/10/0 70/0/0
Banca		67/10/0 68/0/0
Billiton		66/0/0 66/10/0

OILS.

Linseed	ton	19 15/0 19/17/6
Cocoanut, Cochin		28/0/0 28/10/0
Do. Ceylon		23/0/0 0/0/0
Palm, Lagos		22 10/0 0/0/0
Rapeseed, English pale		21/0/0 21/5/0
Do. brown		19/10/0 19 15 0
Cottonseed ref.		20/0/0 0/0/0
Oleine		22/0/0 24/0/0
Lubricating, U.S.		4/0/0 5/0/0
Do. refined		5/0/0 0/0/0
Tar—Stockholm	barrel	0/22/0 0/0/0
Archangel		0/21/0 0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursday.*]

ABERGAVENNY.—For additions, &c., to school buildings, Llangattock-nigh-Usk, for the School Board. Mr. Edwin Foster, architect, Abergavenny:—

E. S. Foster	£122 10
E. Grimmett, Abergavenny (accepted)	69 0

ANDOVER.—For the erection of class and cloak rooms, &c., for the Managers of the National Schools:—

H. A. Annett & Sons, Andover	£[illegible]

BRISTOL.—For the erection of school buildings, Merrywood, Bedminster, for the School Board. Mr. Edward Gabriel, architect:—

		For glazed bricks for dado in place of cement.
Hatherly & Carr	£13,434 0 0	£[illegible] 0 0
J. E. Davis	13,363 0 0	800 0
J. Perkins	13,084 0 0	414 0
J. Perrett	12,974 0 0	603 0
W. Cowlin & Son	12,835 0 0	995 0
A. H. Forse	12,645 0 0	1,120 0
H. J. Rossiter	12,610 0 0	995 0
E. Love	12,552 11 1	1,113 0
G. Downs	12,494 0 0	650 0
G. H. Wilkins	12,340 0 0	900 0
E. Walters	12,246 0 0	940 0
A. J. Beaven	12,090 0 0	890 0
G. Humphreys	11,921 0 0*	758 0*

* Accepted.

BROMLEY (Kent).—For the construction of a new road, with sewer and surface water drains, for Mr. M. Lloyd. Messrs. Hugh S. Cregeen & Son, surveyors :—

A. Heskett	£436 10	J. Woodham	£359 0
F. & W. Lansbury	360 0	E. Peill & Sons, Bromley*	319 10

* Accepted.

CASTLEFORD (Yorks).—Accepted for providing and fixing 420 yds. kerbing, &c., Pontefract-road, for the Local Board. Mr. A. Smithies, Surveyor, Castleford :—

James Taylor, Moldgreen, Huddersfield £110

CHELMSFORD.—For additions, &c., to National School buildings, Springfield, Chelmsford, for the managers. Mr. F. E. L. Harris, architect, Chelmsford :—

J. Smith & Son	£425 0	H. Potter	£385 0
R. Kennell	409 10	F. Johnson, Chelmsford*	385 0

* Accepted.

CHESTER-LE-STREET.—For the erection of chapels, lodge, mortuary, &c., for the Burial Board. Messrs. Cowe, architects, Lambton Grange, Fence Houses :—

For Chapels.

Kell & Grooves, Chester-le-Street	£1,132 2
For Lodge and Board-room.	
Kell & Grooves, Chester-le-Street	556 18
For Draining and Road Formation.	
R. Hudson, jun., Sunderland	1,128 0
For Fencing.	
John Hall, Chester-le-Street	450 0
Total	3,327 0

COBHAM.—For building new wing, and draining and decorating throughout, at Fairmile-court, Cobham, Surrey, for the Rev. L. H. Wellesley Wesley. Messrs. Treadwell & Martin, architects, 2, Waterloo-place, Pall Mall, S.W. :—

For Drainage.—C. A. Heinemann*	£300
For Decorations.—C. A. Heinemann	472
For Building New Wing.—Newland*	840

* Accepted.

COWDENBEATH Fife.).—For laying down 2,438 yds. granolithic pavement and crossings, for the Police Commissioners. Mr. Jas L. Lumsden, architect, Kirkcaldy :

	Crossings.		Pavement.	
Stuart's Granolithic Paving Co. Ltd., Edinburgh	—	....	£401	1 3*
John Kennedy, Kirkcaldy	£89 2 3*	....	—	
Robert McGregor	132 9 0	....	442	0 0
James Jamieson	101 4 10	....	404	7 8
Richard Wallace	95 17 0	....	407	10 1
John M. Scott	101 16 6	....	481	8 7
Adam Hunter	98 11 3	....	417	8 4
John Easton	—	....	409	18 0
James Millar	—	....	429	1 8
John Martin	94 6 0	....	428	14 0
L. & W. MacDonald	97 14 0	....	415	0 2

* Accepted.

CUBERT (Cornwall).—For the erection of school buildings, for the School Board. Mr. Sampson Hill, architect, Redruth :—

James Julian	£743	T. Rodliff, Cubert*	£628

*Accepted.

DARTFORD.—For the execution of road works, South-street, &c., for the Local Board. Mr. Wm. Harston, C.E., High-street, Dartford :—

Artificial Stone Paving to Footways, South-st. and Brandon-rd.

	Per super yd. s. d.
Patent Victoria Stone Co., Ltd.	4 10
John Mowlem & Co.	4 6
Imperial Stone Co.	4 0
W. B. Wilkinson & Co., Ltd.	3 9
Jones' Annealed Concrete Co., Ltd.	3 9
The Patent Indurated Stone Co., Ltd., Glengall-rd., Millwall, E. (accepted)	3 1

Making up Carriage-way, &c., South-st. and Brandon-rd.

John Mowlem & Co., Westminster, S.W. (accepted) £229 5

Hythe-street.

Imperial Stone Co.	£507 10 0
Patent Victoria Stone Co., Ltd.	388 7 0
John Mowlem & Co.	347 13 9
H. B. Wilkinson & Co.	303 5 6
Patent Indurated Stone Co., Ltd.	273 10 0
Jones' Annealed Concrete Co., Ltd., Middlesbro'	262 4 0
Jones' Annealed Concrete Co., Ltd., Middlesbro' (as per schedule prices)	251 11 6

DARTFORD.—For the supply of 500 yards of Guernsey granite, for the Local Board. Mr. W. Harston, C.E., High-street, Dartford :—

	s. d.		
R. L. & I. Fennings, London Bridge*	13 10	....	Guernsey granite.
L. Summerfeld	12 3	....	No. 2 sample.
"	13 3	....	No. 1 "
J. L. Lyon & Co.	13 2	....	—
W. Muir & Co.	14 4	....	Guernsey granite.
Kent-road Co.	14 5	....	" "
"	13 5	....	Cherbourg "

* Accepted.

DRIGG (Cumberland).—Accepted for extensive alterations, &c., to farm house and buildings, Cumblands, for Rev. J. Hodgkin. Mr. Bradley, architect, Millom :—

Wm. Bradley, Millom £486

DURHAM.—Accepted for additions, &c., to Whitworth Hall, for Mr. R. Duncombe Shafto. Mr. H. Henry, architect, Durham :—

J. Kell, Durham £1,148 10

EAST GRINSTEAD.—For the erection of two villa residences, Portland-road, East Grinstead, Sussex, for Mrs. J. A. Ladd. Mr. H. Edmund Mathews, architect, East Grinstead, and 11, Dowgate Hill, S.E. :—

W. H. Steer	£1,450	C. & H Gasson	£1,320
C. Rice	1,346	J. Morris	1,295
H. Young	1,320	E Steer (accepted)	1,125

EAST PRESTON (Sussex).—For the execution of drainage works at the workhouse, for the Union Guardians. Mr. H. Howard, Surveyor, Town Offices, Littlehampton :—

D. Jarett	£348 15 0	T. P. Hall	£302 7 6
W. H. Sawle	307 0 0	*Accepted.	
Seawin Bros., Littlehampton*	305 0 0		

ELTHAM (Kent).—For alterations and additions to 92, High-street. Mr. William H. Duffield, architect and surveyor, 34, Queen-street, Cannon-street, E.C. Quantities supplied :—

Stebbings & Pannett	£750	Knight	£719
Otway	722	Frampton	700

EMBO (N.B.).—For the construction of a pier and other works, for the Sutherlandshire County Council. Mr. Jas. Barron, C.E., 166, Union-street, Aberdeen :—

Geo. Lawson	£2,025 0 0	Geo. McAdie	£1,698 0 0
J. H. Smith	1,981 10 0	Wm. Munro & Son	1,583 10 0
Jas. Drever	1,979 19 2	John Ross	1,538 18 6
Wm. Kidd	1,885 3 8	R. E. Brebner	1,502 4 7
Geo. Rhind	1,702 14 7	Forbes & McLeod	1,480 0 0

GOLSPIE (N.B.).—For the construction of a pier and other works for the Sutherlandshire County Council. Mr. Jas. Barron, C.E., 166, Union-street, Aberdeen :—

Geo. Rhind	£2,070 7 2	Geo. Lawson	£1,859 8 0
J. H. Smith	1,999 0 0	Wm. Morrison	1,783 14 8
Wm. Kidd	1,981 14 5½	Geo. McAdie	1,689 14 7½
Forbes & McLeod	1,974 4 9½	R. C. Brebner	1,439 13 9
John Ross	1,859 8 9		

HENDON (Middlesex).—Accepted for new billiard-room, &c., for Mr. W. R. Bousfield, Q.C., M.P. Mr. George Hornblower, architect, 20, Fitzroy-street, W. :—

William Tout £650

LLANCILLOE (Herefordshire).—Accepted for the restoration of the parish church, exclusive of seats and other fittings. Mr. G. H. Godsell, architect, Hereford :—

Reuben Taylor, Hereford £468

LONDON.—For cleaning, painting, &c., Great Wild-street School, for the School Board for London :—

Britton	£315	Green	£188
Clarke	265	Hornett	182
Girling	233	Peattie	180
Cruwys	188	F. G. Minter (accepted)	166

LONDON.—For cleaning, painting, &c., James-street School, Westminster, for the School Board for London :—

Charteris	£336	Leeks & Hooker	£250
Girling	270	King & Son	236
Hornett	270	F. G. Minter (accepted)	226
Cruwys	255		

LONDON.—For rebuilding No. 59, Carter-lane, E.C., for Mr. Edward Furness. Messrs. Treadwell & Martin, architects, 2, Waterloo-place, Pall Mall, S.W. :—

Ashby Bros.	£2,443	F. & H. F. Higgs	£2,252
L. Whitehead & Co.	2,400	Burman & Son, Sharsted-street, Kennington Park-road (accepted)	2,152
Mark Patrick & Son	2,393		
C. F. Kearley	2,254		

LONDON.—For exterior painting at West-street School, London Fields, for the School Board for London :—

Knight & Son	£454 0	McCormick	£253 0
Stevens Bros.	295 0	Houghton	231 0
Martin	276 0	Silk & Son*	197 10
Grover & Son	270 0		

* Accepted.

LONDON.—For the electric lighting of the Public Hall and Library, Canning Town.

	General Lighting.	Extra power for blowing organ.	Extra for footlights on Stage.
	£ s. d.	£ s. d.	£ s. d.
Fanshawe & Grant	839 0 0	60 0 0	18 0 0
Henry F. Joel & Co.	890 0 0	114 16 0	45 0 0
Brush Electrical Engineering Company*	916 0 0	144 0 0	15 0 0
Trenham & Traters	1060 0 0	117 5 0	53 0 0
Fowler, Lancaster, & Co.	1073 0 0	85 0 0	33 0 0
Rayner, Smith, & Co.	1089 15 0	—	37 17 6
Harry South	1110 0 0	(Approx.) 75 0 0 Including Footlights £73	30 0 0
F. Mackie	1130 0 0	244 8 0	—
Fenton & Barnes	1150 0 0	60 0 0	15 0 0
Laing, Wharton, & Down	1183 0 0	172 0 0 Gas Engine £73	15 0 0
Verity & Sons	1189 0 0	123 0 0	28 0 0
Rowland, Barnett, & Co.	1200 0 0	100 1 6	45 0 0
Suter & Co.	1219 0 0	30 0 0	12 10 0
Paterson & Cooper	1232 0 0	—	25 0 0
Statter & Co., Ltd.	1204 0 0	75 0 0	210 0 0
Strode & Co.	1267 0 0	187 0 0	33 0 0
Crompton & Co.	1298 0 0	220 0 0	66 0 0
British Electric Light Co.	1323 0 0	110 0 0	15 0 0
Roger Dawson, Ltd.	1339 0 0	—	30 0 0
Vaughan & Brown	1340 0 0	66 0 0	23 0 0
C. A. Hemmingway	1350 0 0	—	—
Holmes & Co.	1375 0 0	136 10 0	25 0 0
Peter Jones	1376 7 9	30 0 0	17 1 0
J. C. Howell, Ltd.	1378 0 0	—	61 0 0
Stone & Co.	1384 0 0	146 10 0	31 0 0
Ronald A. Scott, Ltd.	1398 0 0	85 10 0	25 0 0
Thames Ironworks Co.	1440 0 0	79 0 0	18 0 0
" "	1600 0 0	79 0 0	15 0 0
" "	1950 0 0	79 0 0	18 0 0
Leonard G. Tate	1410 0 0	90 0 0	35 0 0
Parr & Gillies	1457 0 0	104 0 0	15 0 0
Lund Bros. & Co.	1460 0 0	70 0 0	15 0 0
Brown & Co.	1500 0 0	75 0 0	25 0 0
New & Mayne	1500 0 0	270 0 0	25 0 0
Hill, Percival, & Co.	1511 0 0	75 0 0	25 0 0
Hulett & Co., Ltd.	1515 0 0	251 0 0	13 0 0
Marryatt & Lilywhite	1525 0 0	140 0 0	44 0 0
Edmundsons, Ltd.	1559 0 0	90 0 0	25 0 0
Rashleigh, Phipps, & Co.	1585 0 0	275 0 0	28 0 0
John C. Christie	1668 0 0	—	—
Douglas C. Bate	1688 0 0	91 0 0	45 0 0
Benham & Sons	1753 0 0	105 0 0	18 0 0
Binks & Co.	1877 10 0	150 0 0	45 0 0

* Accepted.

LONDON.—For alterations and additions to premises Nos. 568 and 568a, Mile End-road, E., for Mr. J. Walklate, under the superintendence of Mr. Charles A. Legg, architect, 13, Grafton-street, Mile End-road, E :—

W. & D. Brown	£1,506 3 6	M. Calnan & Co.	£1,198 0 0
J. W. Best	1,330 9 8	Coulsell Bros.	1,073 0 0
Drew & Cadman	1,206 0 0	S. W. Hawkings	1,045 0 0
Kerridge	1,252 0 0		

LONDON.—For alterations and decorating, No. 124, Edgware-road, for Mr. Jonas A. Turner. Mr. Spencer W. Grant, architect, 63, Finsbury-pavement.

Laurence & Sons	£620	J. Richards*	£487
Lincoln Bros.	535	* Accepted.	

LONDON.—Accepted for addition to warehouse at rear of No. 21, Kingsland High-street, for Mr. George Carter. Mr. H. C. Marston, surveyor, Walthamstow.

J. T. Lane, Alvington-crescent £310

[No Competition.]

LONDON.—Accepted for repairs at Priory Villas, Browhill-road, Catford, for Mr. P. P. Kipping :—

Henry Line, 185, Upper Thames-street, E.C. £138

LONDON.—Accepted for sanitary work at 158, Leadenhall-street, E.C., for Messrs. D. Radford & Co. Mr. Allan Paull, architect :—

Henry Line, 185, Upper Thames-street, E.C. £160

LONDON.—Accepted for alterations at 6-8, Marshalsea-road, Boro, S.E., for the National Telephone Company :—

Henry Line, 185, Upper Thames-street, E.C. £973

LONDON.—For demolishing chimney-shaft at Billiter-buildings, E.C. Mr. F. H. Holdsworth, architect :—

Smith & Sons	£198	J. H. Newman	£76
Allen & Son	110	C. L. Cole, Mile End*	72
H. Line	79	* Accepted.	

For Office Fittings.

C. L. Cole	£84	H. Line, City (accepted)	£69

LONDON.—For additions to laundry, Stanley-terrace, Kensal-road, W., for Mr. H. W. Chalkley. Mr. W. Daniel, surveyor, 181, West End-lane, N.W. :—

Scrayfield	£320	Dainton	£279
Price	290		

LONDON.—For rebuilding the second portion of Scott's Restaurant, Coventry-street, W., for Messrs. Sinclair & Sinclair. Messrs. Treadwell & Martin, architects, 2, Waterloo-place, Pall Mall, S.W. :—

C. F. Kearley	£9,780	W. H. Lascelles	£8,998
Burman & Son	9,255	F. & H. F. Higgs*	8,717

* Accepted.

LONDON.—For providing new offices for all departments of the Lant-street School, Borough, and for providing a new system of drainage, for the School Board for London. Mr. T. J. Bailey, Architect :—

W. Hammond	£1,500	J. Marsland	£1,395
T. L. Green	1,493	G. Newton, Borough*	1,316
Garrett & Son	1,439		

* Recommended for acceptance by the Works Committee.

LONDON.—For refitting all the offices in connexion with the Raywood-street School, Battersea, and also for providing a new system of drainage, for the School Board for London. Mr. T. J. Bailey, Architect :—

Dent & Hellyer	£1,220	L. Whitehead & Co.	£1,110
J. Smith & Sons	1,163	W. Hammond	1,103
S. Polden	1,161	Holloway Bros., Battersea*	1,084
Holliday & Greenwood	1,117		

* Recommended for acceptance by the Works Committee.

LONDON.—For erecting new offices for all departments of the Bolingbroke-road School, Old Battersea, and for providing a new system of drainage, for the School Board for London. Mr. T. J. Bailey, Architect :—

H. King & Sons	£1 926 0 0	E. Triggs	£1,581 0 0
G. Foxley	1,760 0 0	W. Hammond, Battersea*	1,572 10 0
J. Garrett & Son	1,714 0 0		
L. Whitehead & Co.	1,670 0 0		

* Recommended for acceptance by the Works Committee.

LONDON.—For refitting the offices in connexion with the boys' and girls' departments of the Wenlock-road Schools, Hoxton, for the School Board for London. Mr. T. J. Bailey, Architect :—

H. Knight & Son	£1,158	Stevens Bros.	£940
J. Grover & Son	988	M. Calnan & Co., Commercial-road*	885
T. L. Green	980		
J. Edmunds	958		

* Recommended for acceptance by the Works Committee.

LONDON.—For rebuilding the girls' offices of the Nyneheadroad School, New Cross, for refitting the boys' and infants' offices with stoneware troughs and automatic flushing tanks, erecting offices for teachers, and providing a partly new system of drainage, for the School Board for London. Mr. T. J. Bailey, Architect :—

W. Downs	£1,620	J. Smith & Sons	£1,267
Kirk & Randall	1,561	E. Proctor	1,183
A. Black & Son	1,485	M. Calnan & Co., Commercial-road*	1,170
Dent & Hellyer	1,397		
J. Marshland	1,285		

* Recommended by the Works Committee for acceptance.

LONDON.—For reconstructing the girls' and infants' offices in connexion with the Graystoke-place School, Fetter-lane, and for providing a new system of drainage, for the School Board for London. Mr. T. J. Bailey, Architect :—

J. Garrett & Son	£880	Davis Bros.	£784
L. Whitehead & Co.	815	T. L. Green	767
T. Cruwys	795	E. Triggs, Clapham*	662

* Recommended by the Works Committee for acceptance.

LONDON.—For providing and fixing a complete system of low-pressure hot-water apparatus for warming the whole of the school, Blackheath-road School, Greenwich-road, as enlarged, for the School Board for London :—

Z. D. Berry & Sons	£496 0	G. Davis	£450 0
J. F. Clarke & Sons	488 0	J. Fraser & Son	428 0
Maguire & Son	468 14	W. Richardson & Co.*	426 0

* Recommended by the Works Committee for acceptance.

LONDON.—For providing and fixing a complete system of low-pressure hot-water apparatus for warming the first portion of the new school on the site in Fair-street, Horselydown, for the School Board for London :—

T. Green & Son, Ltd.	£274 0	C. P. Kinnell & Co.	£225 0
J. & F. May	243 0	Maguire & Son, Dublin*	212 10
J. Gray	227 0		

* Recommended by the Works Committee for acceptance.

LONDON.—For removing the soil pipes from the girls' offices on the roof of the Rutland-street School, Mile End Old Town, for providing and fixing new pipes, disconnecting and ventilating the drains, and also for providing new inspection chambers, for the School Board for London :—

Stevens Bros.	£892	Marchant & Hirst	£749
G. Parker	830	Akers & Co.	743
J. T. Robey	800	G. Newton, Borough*	740
Dent & Hellyer	782	Johnson & Co.	539

* Recommended for acceptance by the Works Committee.

LONDON.—For a new system of low-pressure hot-water apparatus at the school in Laxon-street, Bermondsey, for the School Board for London :—

C. P. Kinnell & Co.	£580 0	J. & F. May	£443 0
I. Gray	487 0	H. Parsons & Harris	412 10
W. G. Cannon	479 0	Maguire & Son	379 8
Z. D. Berry	449 0	Vaughan & Brown, Kirby-street, E.C.*	370 0
J. F. Clarke & Sons	445 0		

* Recommended for acceptance by the Works Committee.

LONDON.—For providing and fixing a system of low-pressure hot-water apparatus for warming the Junior Mixed School, in Camden-street, Camden Town, for the School Board for London :—

Z. D. Berry & Sons	£237 0	T. Potter & Sons, Ltd.	£175 0
W. G. Cannon	210 0	J. C. & J. S. Ellis	165 0
G. Davis	190 0	Purcell & Nobbs, Cleveland-street*	148 0
Maguire & Son	184 7		

* Recommended for acceptance by the Works Committee.

LONDON.—Accepted for repairs, alterations, and decorations at No. 11, Conduit-street, W. Mr. G. Gordon Stanham, architect, 100B, Queen Victoria-street, E.C. :—

John Appleby, Cornwall-road, S.E. £309

LONDON.—For rebuilding "White Swan," at Kirby's Wharves, Nine Elms, S.W., for Messrs. Allnutt Bros. Mr. L. V. Hunt, architect :—

L. Whitehead & Co. £2,610

[No competition.]

LONDON.—For additions, &c., to houses, Nos. 103, 105, Woodstock-road, Finsbury Park, for Messrs. Blackney & Pickard. Mr. F. Child, surveyor, 1, Station-road, New Barnet, and 65, Chancery-lane, W.C. :—

Fredk. Voller	£166 0	McFarlane Bros.	95 10
C. H. Binney	130 0	W. Wells	85 0
G. Atkins	116 15	Wells & Son, Red Lion-street (accepted)	85 0
J. Ellwood	112 0		

LONDON.—Accepted for erection of two dwelling-houses, Cheshire-street, Bethnal Green, E., for Mr. Alfred La Riviere. Mr. Alfred Conder, architect, Palace Chambers, Westminster:—
E. G. Browning & Co. £1,071 15

LONDON.—Accepted for new work at the Renfrew-road Workhouse, for the Lambeth Board of Guardians. Mr. E. H. G. Brewster, consulting engineer, Westminster:—
Boilers and Engineers' Work.
Galloway's, Limited £1,500
New Chimney Shaft and Builders' Work.
W. Neil £1,906

LONDON.—For repairs to be done at the Licensed Victuallers' Asylum, Asylum-road, Old Kent-road, S.E. Mr. W. F. Potter, architect:—

E. Brown	£400 16 6	W. J. Walker ..	£243 0 0
H. H. Holingsworth..	258 0 0	F. Dawes, Peckham Rye (accepted)	229 0 0
S. Hayworth & Sons..	267 10 0		

LONDON.—For proposed alterations and repairs at 765, Wandsworth-road, S.W., for the London & South Western Bank. Mr. John H. Bethell, architect, 31, Liverpool-street, E.C. Quantities supplied by Mr. Henry Theobald., F.S.I., 87, Finsbury-pavement, E.C.:—

R. S. Ronald	£1,090	R. E. Williams & Son	£840
H. A. Carmich	970	Jas. Carmichael*	810

*Accepted.

LONDON.—For the erection of factory, stables, and houses in Ravenscroft-street, E., for Mr. John Putney. Mr. W. A. Finch, architect, 76, Finsbury-pavement, E.C.:—

Bush & Sons	£8,080	Jarvis & Sons, Hackney-road (accepted)	£7,475
Chessum & Sons	7,999		
T. W. Hawkings	7,577	Coulsell Bros.	7,432
W. Gladding	7,559		

LONDON.—Accepted for new roads and sewers on Springfield Estate, Herne Hill, for Mr. G. A. Young. Mr. Charles Barry, surveyor, 1, Victoria-street, Westminster:—
Mayo & Co., Peckford-place Works, Brixton-road.... £2,800
[No competition.]

NEWCASTLE-ON-TYNE.—For the erection of baths and wash-houses, Gallowgate, for the Corporation. Mr. Gibson Kyle, architect, 145, Pilgrim-street, Newcastle-on-Tyne. Quantities by architect:—

Kell & Groves	£10,276 10 1	Kirk & Brown	£9,222 16 1
H. Brown & Co.	10,193 3 8	G. Scott & Son	9,134 0 0
J. C. Hope	9,618 0 0	Joseph Elliott	9,070 0 0
J. & W. Lowrey	9,586 0 0	A. Bruce	9,049 15 0
Middlemiss Bros.	9,445 0 0	C. W. King, Cheltenham*	8,396 10 7
G. H. Mauchlen	9,407 19 6		

*Accepted.

NEWPORT (Salop).—Accepted for the construction of waterworks (six contracts), for the Local Board. Mr. W. Wyatt, engineer, Pride Hill Chambers, Shrewsbury:—

Ed. Whittingham, Newport, Salop	£485 10 0		
Ed. Whittingham, Newport	187 10 0		
J. & S. Roberts, West Bromwich	3 19 6	7 in. pipes per ton.	
J. & S. Roberts	4 3 0	3 in. "	"
H. Wyndham, Delph Works, Ruabon	0 0 8¾	glazed pipes per yd.	
Wyatt Bros, Whitchurch, Salop	0 1 6	7 in. pipes	"
Wyatt Bros	0 1 0	3 in. "	"
Massey Bros., Newport, Salop	622 10 0		

NORTHAMPTON.—For additions and improvements to No. 9, Lady's-lane, Northampton, for Mr. H. Harris. Messrs. Mosley & Anderson, architects and surveyors, Goodyear Chambers, Northampton. Quantities by architect:—

R. Hickman	£400 0	E. D. Sharman	£366 0
J. Dunckley	327 0	W. Gregory & Son	295 0
J. Garrett	319 10	T. Islip	293 0
W. Beardsmore	308 10	Wilford & Judkin*	277 0

[All of Northampton.]
* Accepted.

PETERBOROUGH.—For the erection of offices, Queen-street, for Messrs. Rippon & Co., Mr. Jas. Ruddle, architect, Boroughbury, Peterborough. Quantities by architect:—

Furnis	£369 0	Wenlock	£336 14
Bridgfoot	355 0	Gray	329 0
Sibley	350 0	Guttridge	323 0
Machin	342 0	Nichols (accepted)	303 0

[All of Peterborough.]

PETERBOROUGH.—For drainage and alterations at Peterboro' Gaol, for the Magistrates of the County and Soke of Peterborough:—

Swain	£288	Machin	£263
Guttridge	273	Wenlock (accepted)	244

[All of Peterborough.]

PRESTON.—For additions, &c., to St. Peter's Schools, Coldbath-street, Preston, for the School Managers. Messrs. Park & Son, architects, 18, Winckley-street, Preston. Quantities by the architects:—

M. Shorrock	£1,990 10 0	R. Alston	£1,915 0 0
D. Tullis & Son	1,589 8 7	W. Whiteside	1,882 2 10
J. Christian	1,568 15 0	Thos. Croft (accepted)	1,793 0 0

[All of Preston.]

PRESTON.—For additions, &c., to St. Mary's Church, Goosnargh, near Preston, for the Vicar and Churchwardens. Messrs. Park & Son, architects, 18, Winckley-street, Preston. Quantities by the architects:—

W. Whiteside	£1,234 2	T. Cottam	£1,077 0
J. Walmsley	1,130 0	H. Turner	954 13
W. Hothersall	1,129 0	J. Cartmell, Preston*	877 15

*Accepted.

READING.—For building new water-closets and ventilating dormitories at Borough Police-station, Reading:—

W. Hawkins	£109	G. H Tucker	£185
McCarthy E. Fitt	187	T. Pilgrim*	159

* Recommended for acceptance.

RUSHDEN (Northampton).—For the erection of a boot and shoe factory in Rectory-road, for Messrs. E. Claridge & Sons. Messrs. Mosley & Anderson, architects and surveyors, Goodyear Chambers, Northampton. Quantities by architect.

G. Branson & Son	£3 528 0 0	T. Wilmoth, jun.	£3,299 0 0
T. Swindall	3,499 0 0	G. Fisher	3,270 10 0
G. E. Fathers	3,400 0 0	F. Johnson & Son	3,270 0 0
R. Cosford	3,400 0 0	G. Henson	3,250 0 0
E. Brown & Son	3,380 0 0	T. & C. Berril	3,209 0 0
C. Bayes & Son	3,355 10 0	H. Martin, Northampton*	2,939 0 0
R. Marriott, jun.	3,330 0 0		
H. Sparrow	3,300 0 0		

*Accepted after modifications.

ST. ANDREWS (N.B.).—For the execution of drainage and sewerage works, for the Magistrates and Council. Mr. Henry Bruce, C.E., County Buildings, Cupar Fife. Quantities by the engineer—

R. Chalmers	£1,872 19 6	Mitchell & Coy	£1,651 10 8
Wm. Chalmers	1,839 0 0	Wm. Anderson	1,506 13 1
J. & C. Hay	1,789 5 3	Geo. Mackay & Son	1,483 5 8
L. & W. McDonald	1,779 15 3	Robert Gilmer, Strathmegh*	1,366 1 7½
John Martin	1,749 16 5		
Archibald White	1,673 16 5	John & James Stevens	1,261 0 0
D. McDonald & Son	1,661 11 5		

*Amended and accepted.

SOUTH SHIELDS.—For the erection of school buildings off Stanhope-road, for 1,772 places, for the School Board. Messrs. Davidson & Bendle, architects, South View-terrace, South Shields. Quantities by the architects:—

W. J. Robertson	£17,557	W. Christie	£16,125
T. L. Miller	16,897	Jas. Young	15,950
S. Sherrif	16,590	T. Kennedy	15,907
T. Hunter	16,402	T. Lumsden	15,700
A. Pringle	16,357	Joseph Elliot	15,393
J. C. Hope	16,352	R. Goodwin & Son, South Shields (accepted)	15,380
Cowper & Henderson	16,256		

STROUD.—For the erection of vagrant wards, &c., at the workhouse, for the Union Guardians. Mr. W. H. C. Fisher, architect, 6, Rowcroft, Stroud:—

Orchard & Peer	£985 0 0	P. Ford	£880 0 0
H. Beavis	971 4 0	N. Baxter, Stroud*	830 0 0
Drew Bros.	897 0 0	T. Poulton	721 10 0
English & Sons	895 0 0		

*Accepted.

TUNBRIDGE WELLS.—For the erection of house, shop, and baking premises at Pembury, near Tunbridge Wells, for Mr. Owen Seymour. Mr. H. Adams, architect, Monson-road, Tunbridge Wells:—

J. R. Padgham	£1,137 0	J. C. Elkington, Tonbridge (accepted)	889 4
W. E. Judd	1,096 0		
G. & F. Penn	967 0		

WOLVERHAMPTON.—For alterations and additions to St. Patrick's (R.C.) Schools. Mr. J. H. Fleeming, architect:—

Cave	£1,550 0	Jones	£1,350 0
H. Gough	1,550 0	T. & S. Ham	1,300 0
Lovatt	1,534 0	Guest & Son	1,250 0
Guest	1,499 0	Bradney & Lloyd	1,183 0
Willcock & Co.	1,379 13		

Amended tenders.

Guest & Son	£1,078 0 0	Bradney & Lloyd*	£1,018 0 0
T. & S. Ham	1,077 7 6		

* Accepted.

PUBLISHER'S NOTICES.

***Registered Telegraphic Address*, 'THE BUILDER,' LONDON.**

THE INDEX and TITLE-PAGE for Volume LXVI. (Jan. to June, 1894) were given as a supplement with the number for July 14 last.

CLOTH CASES for Binding the Numbers, price 2s. 6d. each; also READING CASES (Cloth), with Strings, price 9d. each; also THE SIXTY-SIXTH VOLUME of "The Builder" (bound), price Twelve Shillings and Sixpence, are now ready.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

CHARGES FOR ADVERTISEMENTS.

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Six lines (about fifty words) or under ..... 4s. 6d.
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Terms for series of Trade advertisements, also for Special Advertisements on front page, Competitions, Contracts, Sales by Auction &c., may be obtained on application to the Publisher.

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Advertisements for the current week's issue are received up to THREE o'clock p.m. on THURSDAY, but "Classification" cannot be guaranteed for any which may reach the Office after HALF-PAST ONE p.m. on that day. Those intended for the front Page should be in by TWELVE noon on WEDNESDAY.

SPECIAL.—ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before 10 a.m. on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent

PERSONS Advertising in "The Builder," may have *Replies addressed to the Office*, 46, Catherine-street, Covent Garden, W.C., *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES, { NINEPENCE EACH. By Post (carefully packed) 1s.

W. H. Lascelles & Co.,
121, BUNHILL ROW, LONDON, E.C.
Telephone No. 270.
HIGH-CLASS JOINERY,
LASCELLES' CONCRETE.
Architects' Designs are carried out with the greatest care.
CONSERVATORIES,
GREENHOUSES,
WOODEN BUILDINGS,
Bank, Office, & Shop Fittings.
CHURCH BENCHES & PULPITS.
ESTIMATES GIVEN ON APPLICATION.

TO CORRESPONDENTS.

H. H. R.—(We cannot answer such "primary school" questions.—H. W. & Co. (too late; next week.)

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied DIRECT from the Office to residents in any part of the United Kingdom, at the rate of 19s. per annum PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, &c. 26s. per annum. Remittances (payable to DOUGLAS FOURDRINIER) should be addressed to the Publisher of "THE BUILDER," No. 46, Catherine-street, W.C.

SUBSCRIBERS in LONDON and the SUBURBS, by prepaying at the Publishing Office, 19s. per annum (or 4s. 9d. per quarter), can ensure receiving "The Builder" by *Friday Morning's Post.*

THE BATH STONE FIRMS, Ltd.
BATH,
FOR ALL THE PROVED KINDS OF BATH STONE.
FLUATE, for Hardening and Preserving Calcareous Stones and Marbles.

DOULTING STONE.
CHARLES TRASK & SONS,
DOULTING, SHEPTON-MALLET.
London Agent:
E. A. WILLIAMS, 16, Craven-st., Strand, W.C.

HAM HILL STONE.
The attention of Architects is specially invited to the durability and beautiful colour of this material. Quarries well opened. Quick despatch guaranteed. Stonework delivered and fixed complete. Samples and estimates free. Address, The Ham Hill Stone Co., Norton, Stoke-under-Ham, Somerset. London Agent: Mr. E. A. Williams, 16, Craven-st., Strand, W.C. [ADVT.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co. [ADVT.

SPRAGUE & CO.'S
INK-PHOTO PROCESS,
4 & 5, East Harding-street,
Fetter-Lane, E.C. [ADVT.

QUANTITIES, &c., LITHOGRAPHED accurately and with despatch.
METCHIM & SON, 20, Parliament-st. S.W.
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STEAM ROAD ROLLERS ON HIRE.
6 tons, 10 tons, 12 tons, 13 tons.
Also One-Horse and Two-Horse Rollers for Lawn Tennis and Cricket Grounds, &c.—Apply to THOMAS ADAMS, Contractor, Green Lanes Goods Station, G.E.R., Wood Green, London, N.

SLATES. SLATING. TILING.
Roberts, Adlard, & Co.
47, EASTCHEAP, CITY.
SLATE SLAB WORKS.
EUREKA GREEN SLATES.
SOLE IMPORTERS.

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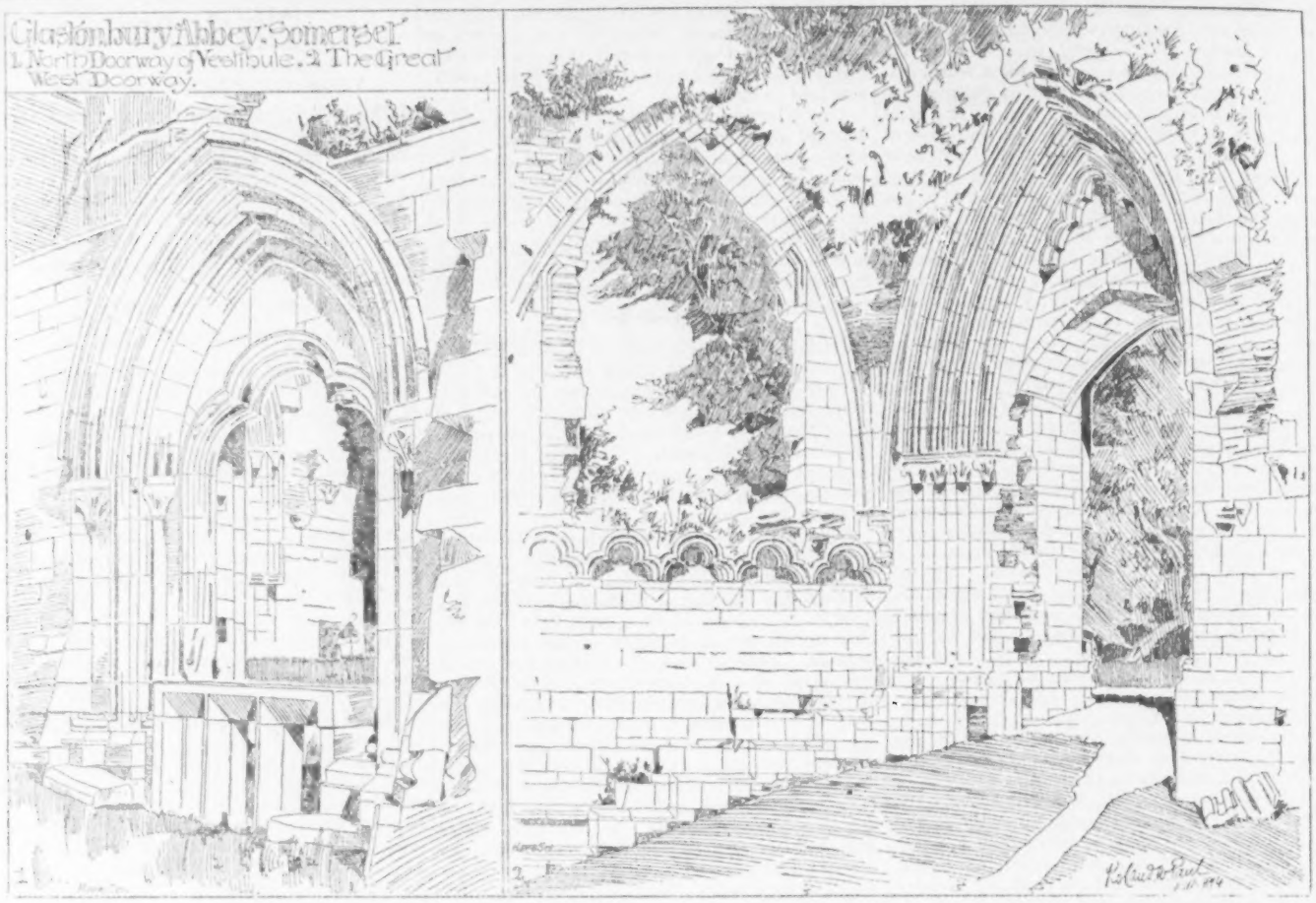
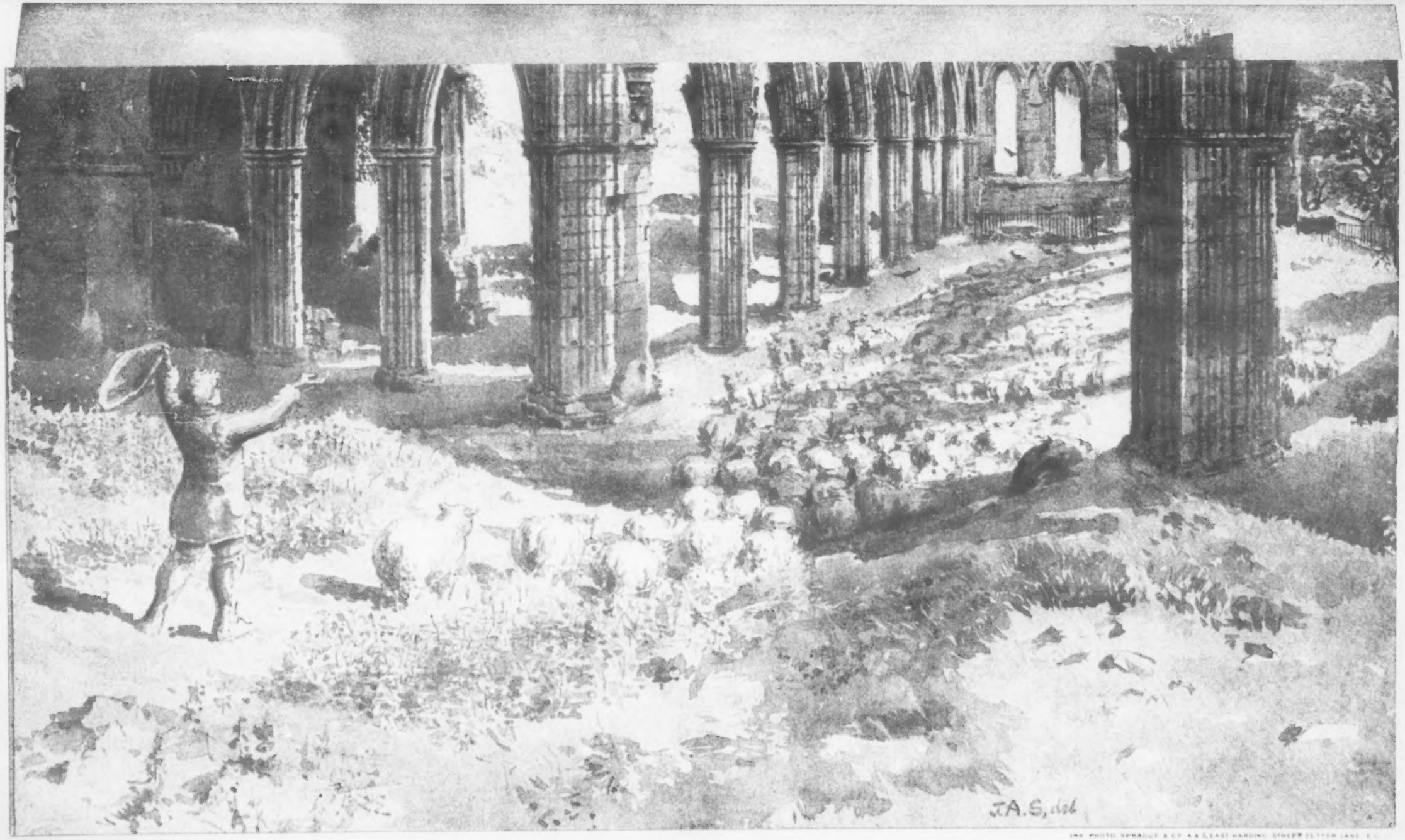


of the ground, outside the wall of the chapel, was a well, covered by a semi-circular arch, enriched with chevron ornament. This is reputed to be the Holy Well, and was apparently approached originally from the outside. At a much later period, however (in the fifteenth century), a crypt was formed below the chapel, and sundry other structural alterations were made—a doorway and an approach to the crypt through the north wall of the chapel, with westernmost bay (see plan, and sketch of doorway on plan); the crypt was lighted by windows, mostly of three lights, square-headed, piercing the original plinth, and a second doorway was made on the south side of the chapel, in the easternmost bay, and a steep flight of steps of somewhat peculiar construction which led downwards to the well. The mark of the low roof which covered this building still shows against the outer wall of the chapel, but there are no traces of where the side walls abutted. The well was also approached from a doorway in the side wall of the crypt. This somewhat peculiar arrangement is shown in detail on the large ground plan. The crypt itself was filled with rubbish until cleared out in 1825, when the passage and stair and well were discovered, and the whole thrown open. This chapel of St. Mary was, as has been mentioned above, originally a building standing distinct from the great Benedictine church eastward of it, the foundations of which, 400 ft. long, "were laid by the king's camerarius, Radulphus, son of King Stephen."* This work was undertaken either at the same period, or soon after the completion of the chapel of St. Mary. It is quite possible that as the rebuilding of the monastic offices formed necessarily a part of the scheme of rebuilding, that a portion of the nave—that against which the cloister abutted on the south side—was as early in date as the chapel itself. This would account for the distinctly early character of the three remaining bays of the south nave aisle wall—all that is left of this portion of the church. They are distinctly earlier than the work in the remains of the transepts and eastern arm, and have in each bay windows with semi-circular arches inside but pointed outside. Eastward of this, no round arches, either in the windows or arcades, occur. A stone seat runs along the inner face of the wall, and the vaulting shafts, in clusters of three, are brought down on to it. At the west end of the present remains of this wall is the eastern jamb of the west entrance to the cloister—the so-called "Monks'" doorway, as distinct from the Abbots' doorway further eastward—which is of two orders, and formerly had a semi-circular arch enriched with chevron moulding. A portion of the arch remains in good preservation (see block.) Against the south or outer face of the wall are the corbels, and holes which formerly carried the timbers of the roof of the north cloister walk. Flying buttresses were carried over this from the wall of the aisle, and parts of them remain. It should be noted that the corbel table which remains is of the same pattern as that on the Chapel of St. Mary, which seems to show that the wall was carried up to the top, and possibly roofed in at the same period as that of the Chapel.

From measurements which have been taken expressly for the ground plan given in the present number, the division of the nave seems to have been into *nine* bays and not ten, as in the late Professor Willis's plan. It is a matter of some wonder that so interesting a ruin as Glastonbury does not seem to have been planned in detail before—the largest so far published being that in the "Vetusta Monumenta," which has but llittle detail The width of the nave seems to have been about 76 ft., or slightly wider than the presbytery, but it is a matter of some difficulty to determine exactly. The only other portion of the nave is the central portion of the west wall pierced by the great western doorway, and arcaded on its inner or eastern face. This is of thirteenth-century, or Early English, date, and seems from its style to have been built or rebuilt at the same time as the vestibule or Galilee porch. A point not, we believe, hitherto noticed is that the main axis of the Chapel of St. Mary, and the Galilee is not parallel with the main axis of the great church. The whole of the work westward of the western doorway of the great church bends southward, and the centre line of the great church, if prolonged, would strtke the west wall of St. Mary's Chapel, nearly three feet north of the centre. The great doorway is not also central with the vestibule, and there is consequently more wall space on the south than on the north. This has been utilised as a place for, in all probability, a figure or altar, and the bracket for the former still remains in the wall (see sketch of west doorway).

The Galilee itself was of three bays, and arcaded on its inner face. The centre bay in each side was occupied by a doorway. That on the north remains (see sketch), but with the exception of a small portion of the jamb, the corresponding doorway on the south has disappeared. The easternmost bay, next the great doorway, was almost entirely occupied by a flight of steps which led up to the nave level, four or five feet above the level of the Galilee floor. The traces of these steps are still apparent against the bench of the

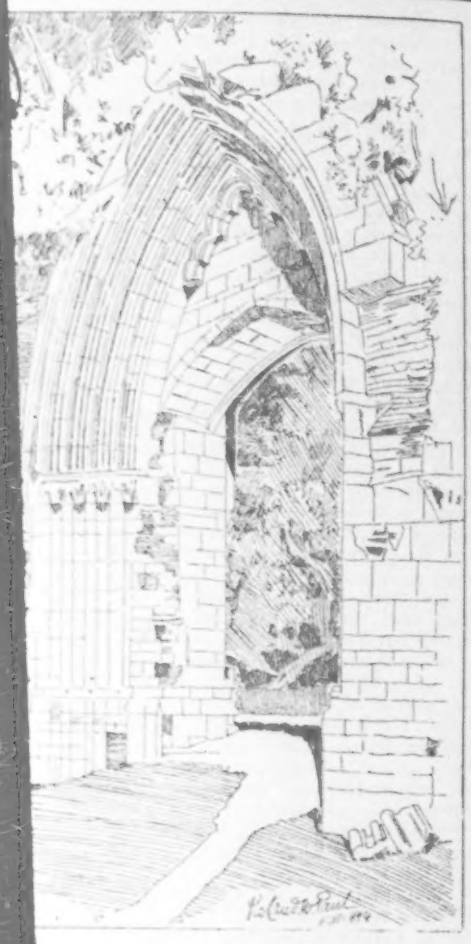
* Willis.



IND. PHOTO. SPRAGUE & CO. 44 & 45 EAST HARDING STREET FLETTER LANE E.C.

THE ABBEYS OF GREAT BRITAIN.—No. 2. RIEVAULX.

Drawn by Mr. J. A. Slater



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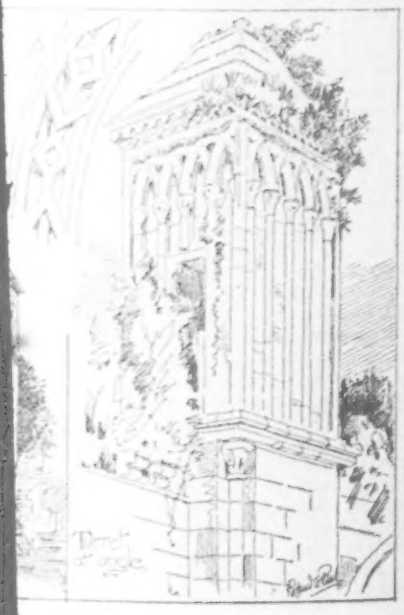
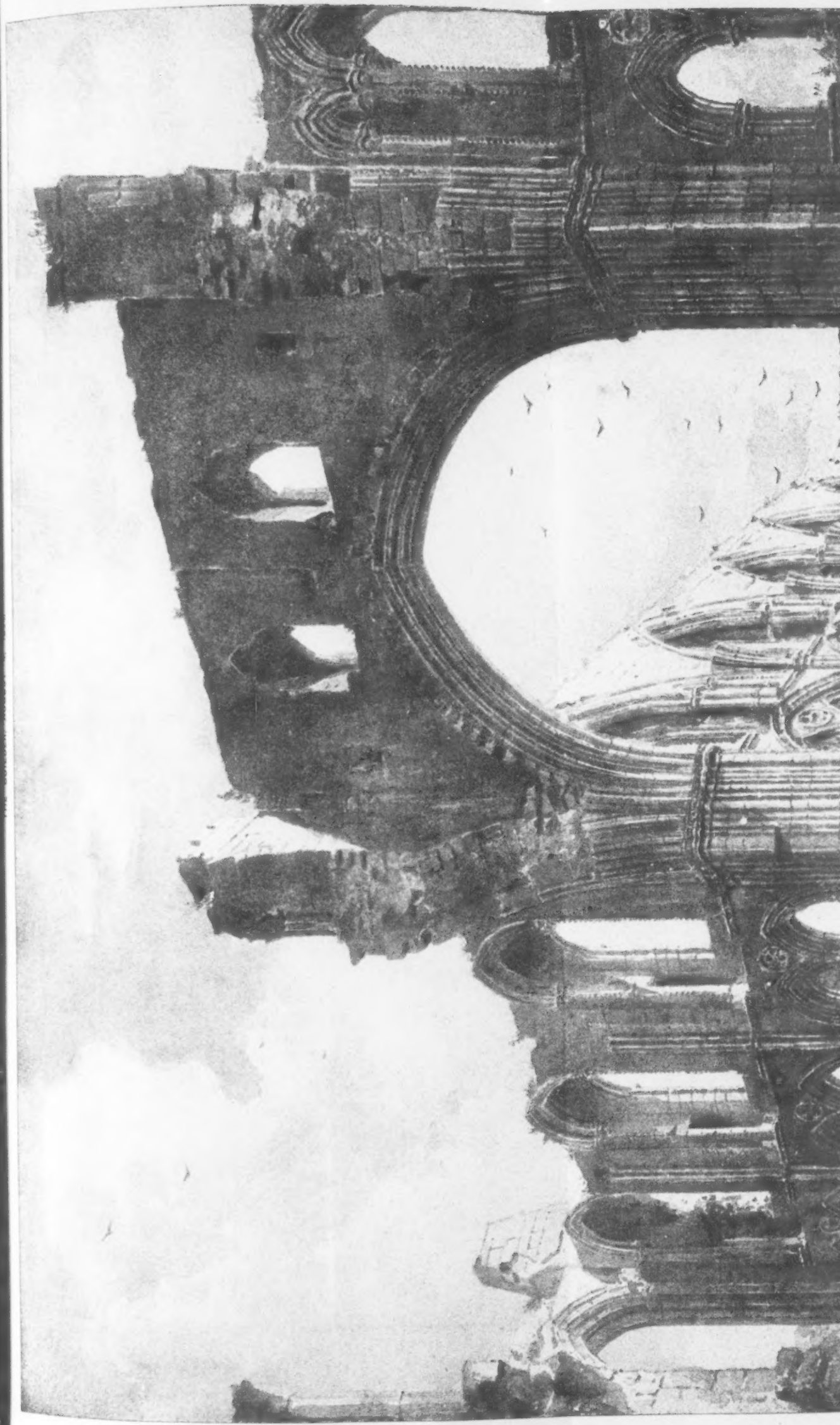
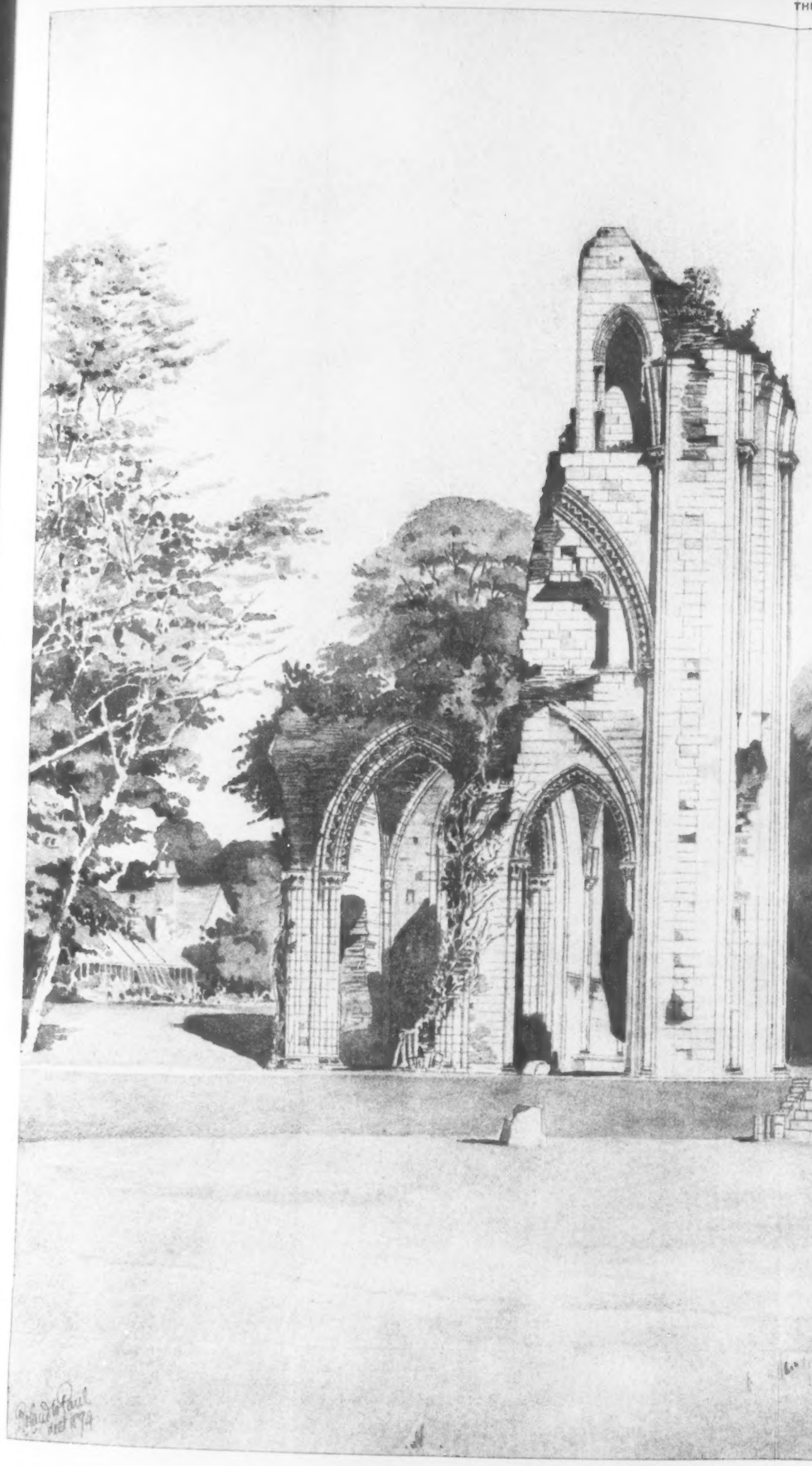




THE ABBEYS OF GREAT BRITAIN.—No. 2. RIEVAULX.

Drawn by Mr. J. A. Slater



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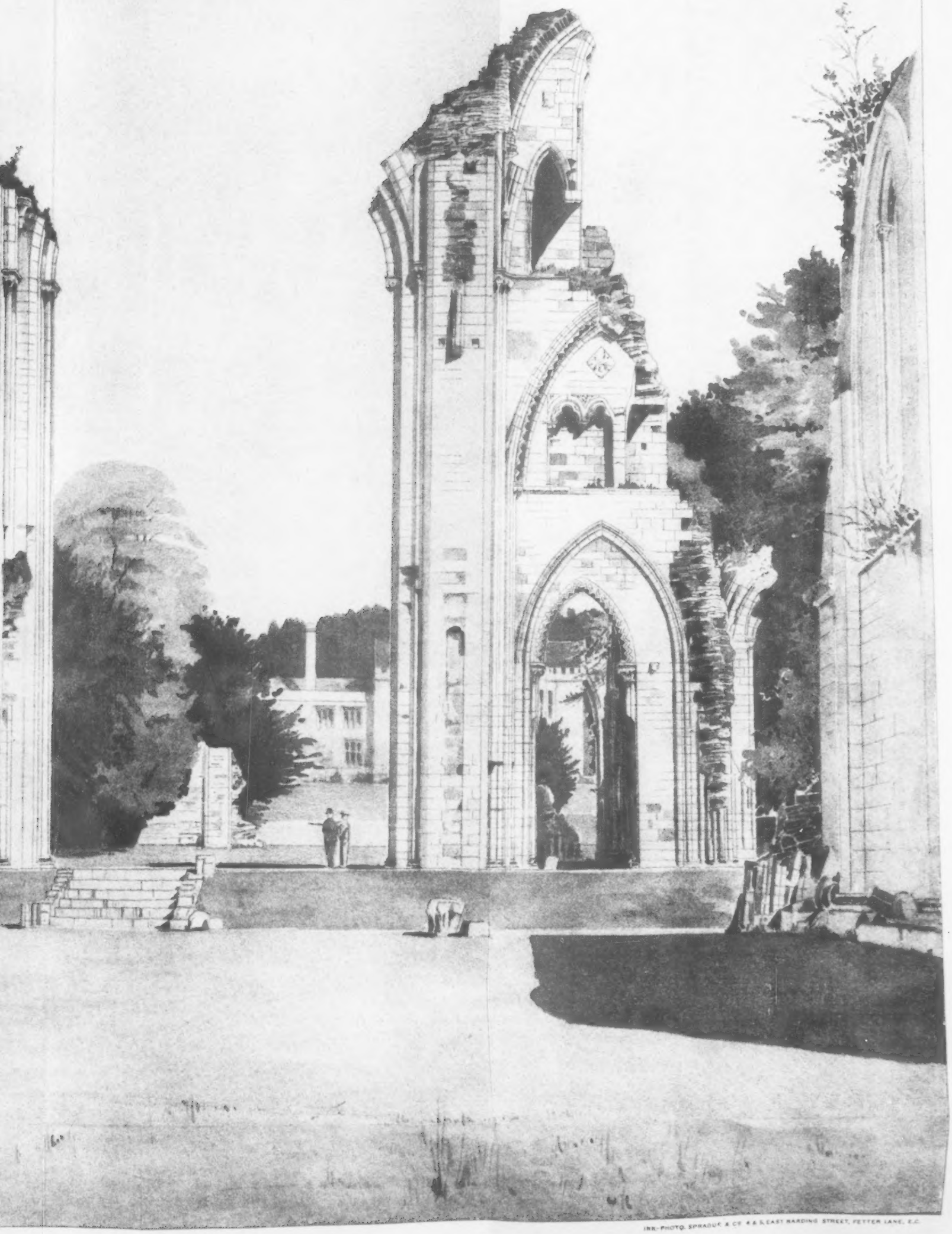

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OF GREAT BRITAIN.—No. 3. GLASTONBURY.

DRAWN BY MR. ROLAND W. PAUL.

Glastonbury Abbey Church — Ground Plan.

Remains of a building now destroyed.

1p 5p 10p 20p 30p 40p 50p 60p Feet.
Scale.

Steps down to Crypt.

The Chapel of St Mary

The Gahlee

Buttresses remain in part at higher level.

Fragment of W. respond of Nave Arcade.

Reference
- First "Transitional"
- Second ditto.
- Early English.
- Decorated.
- Perpendicular.

Inner doorway of Crypt.

Inner face of walls of Crypt.

centre line of Chapel.

centre line of Great Church.

steps up

The Great West Doorway.

12" steps down

centre line of Crypt.

56'-0" to jamb of Cloister door.

Width of the wall of Chapel over.

Well

Entrance to Crypt below S. Mary's Chapel (at B on plans).

Half Plan of Crypt below St Mary's Chapel (shewing position of the Well).

56'-0" to west wall

100 ft. To west face of pier at C

Jamb of doorway to Cloister.

Remains of the South Wall of the Nave.

Site of the North transept.

Chapel

Piscina

Glastonbury Abbey Church.

General Plan shewing present remains. (Conjectural portions shewn by dotted lines.)

AA. Sites of Altars.

50 0 50 120 200 Feet
Scale.

Nth Transept

St Mary's Chapel

Galilee.

Nave.

Tower

Presbytery.

Cemetery.

Site of the Cloister.

Sth Transept

Site of the North Transept.

Chapel.

Piscina

Remains of the Presbytery, Central Tower & Transepts.

Cemetery.

Site of the Cloister.

S^th Transept.

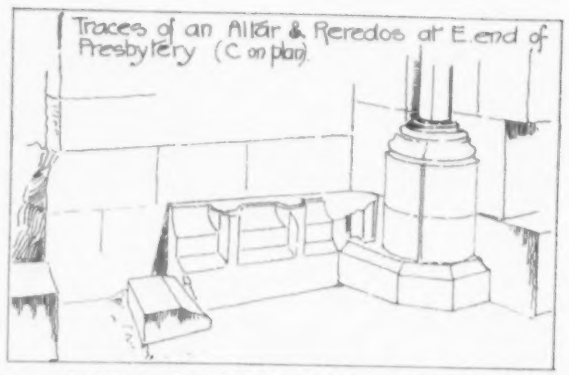
Piscina

Traces of an altar.

Site of the Central Tower.

Choir & Presbytery.

Traces of an Altar & Reredos at E. end of Presbytery (C on plan).



Site of the High Altar.

Traces of an Altar & Reredos. C

Traces of an Altar.

100 ft to first vaulting shaft of Nave Aisle.

Chapel.

Piscina

Richard de Paul mens et del. 1874.

PHOTO-LITHO. SPRAGUE & Co. 4 & 5 EAST HARDING STREET FETTER LANE E.C.

Royal Academy Exhibition, 1894.

SCHOOLS, PORT SUNLIGHT, CHESH[illegible].—Messrs

—Messrs. Douglas & Fordham, Architects.

Glastonbury Abbey Church — Ground Plan.

Remains of a building now destroyed

Scale. 1p 5p 0 10p 20p 30p 40p 50p 60 Feet.

Reference.
- First "Transitional"
- Second. ditto.
- Early English.
- Decorated.
- Perpendicular.

The Chapel of St Mary

The Galilee

Steps down to Crypt.

Buttresses remain in part at higher level.

Fragment of W. Respond of Nave Arcade.

Inner doorway of Crypt.

Inner face of walls of Crypt.

centre line of Great Church

centre line of Chapel

steps up

The Great West Doorway.

56'-9" to jamb of Cloister door.

Steps down to Well.

centre line of Crypt.

Width of the wall of Chapel over.

Well

Half Plan of Crypt below St Mary's Chapel (shewing position of the Well).

56'-9" to west wall

100 ft to west face of pier at C

Jamb of doorway to Cloister.

Remains of the South Wall of the Nave.

Entrance to Crypt below S. Mary's Chapel (at B on plans).

Chapel

Piscina.

Chapel.

Site of the North Transept.

Remains of the Presbytery, Central Tower & Transepts.

Glastonbury Abbey Church.

General Plan shewing present remains (Conjectural portions shewn by dotted lines)

AA. Sites of Altars.

Scale. 50 0 50 100 200 Feet

Nth Transept

B

St Mary's Chapel

A

Galilee.

A

Nave.

Tower.

Presbytery.

A

56'-9"

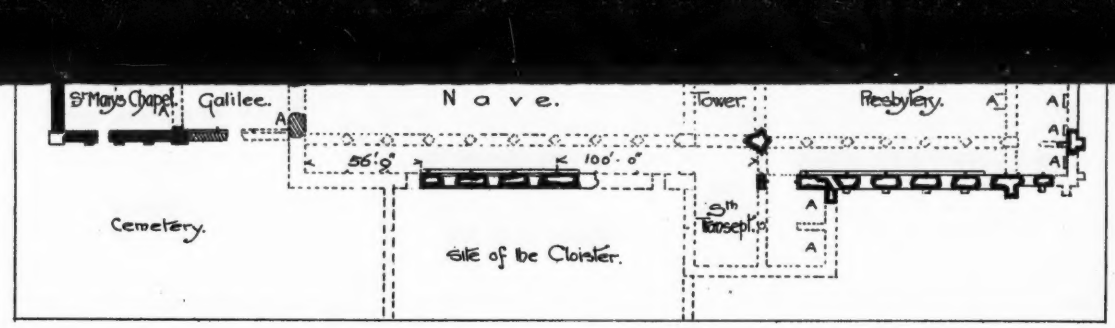
100'-0"

Sth Transept

Cemetery.

Site of the Cloister.

Wall of the Nave.



Chapel
Piscina.
Chapel.
Piscina
Site of the North Transept.

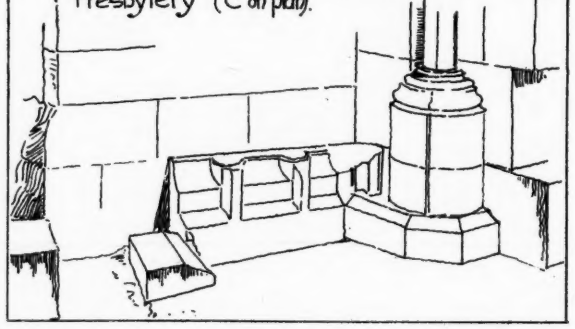
Remains of the Presbytery, Central Tower & Transepts.

Piscina
Traces of an altar.

Site of the Central Tower.

Choir & Presbytery.

Traces of an Altar & Reredos at E. end of Presbytery (C on plan).



Site of the High Altar.

Traces of an altar & Reredos. C

Traces of an altar.

Piscina

100 ft to first vaulting shaft of Nave Aisle.

Chapel.

Roland to Paul. mens et del. 1894.

PHOTO-LITHO. SPRAGUE & Co 4 & 5 EAST HARDING STREET FETTER LANE, E.C.